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Packaging Law

Materials, Equipment and Procedures Used in Package Design, Production and Merchandising ★ Buyers' Directory of the Packaging Industries ★ Alphabetical Index of Manufacturers and Addresses ★ Trade Name Directory

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DESIGN PRINCIPLES

Section One

Pages 5 to 18

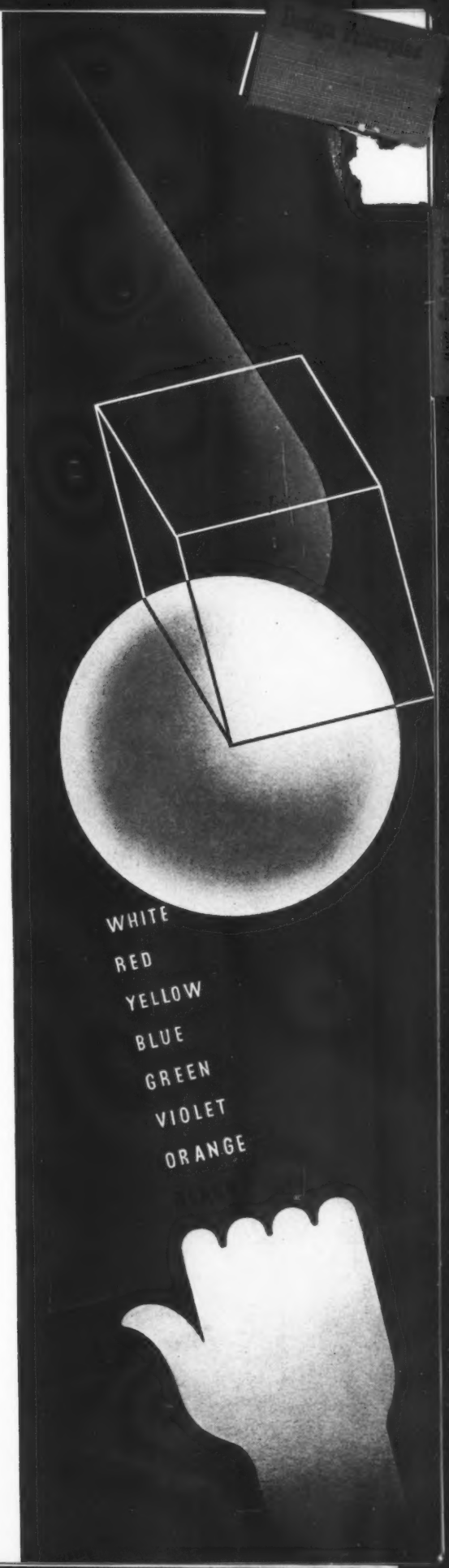
PROCEDURE IN DESIGN

DESIGN TESTING TECHNIQUES

MERCHANDISING CONSIDERATIONS

PRODUCTION CONSIDERATIONS

COLOR AND REPRODUCTION METHODS



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Procedure in Design

Package design is not art—though a package may become a fine example of industrial art. Package design is not engineering—though a package must be properly engineered if it is to achieve its purpose in transporting, measuring, preserving and protecting the product. Package design is not advertising or salesmanship—though a package must incorporate elements satisfying the product's need for both successful advertising and effective salesmanship.

Package design is actually the successful organization of a suitable compromise solution to a whole series of demands and requirements placed upon the package. Like most other problems in organization, it involves three steps—research, planning and action. In the case of the package, these steps might be called Research, Design and Introduction to Trade.

Various companies employ differing methods for carrying on all three of these activities. Obviously the methods should vary with the problem and with the resources of the company involved, yet certain general principles and procedures can be outlined on the basis of known experience. The individual manufacturer will, of course, modify these procedures in accordance with his own special requirements.

Research

Before a line can be drawn on the drafting board, it is essential that certain information be prepared as a basis for the analysis of the problem at hand. Research—the

ferreting out of this information—breaks down into four categories in preparation for designing a package.

1. Consumer research: It is essential, first of all, to determine what the consumer's desires and needs may be. What products in the same category are today being offered the consumer. In what sizes and price ranges do these fall. To what degree do the various types of competitive products win consumer favor. Is there any existing consumer dissatisfaction with present products. Are there any unsupplied consumer demands. How heavy or how thin is the market in the price ranges.

All of these and numerous other questions can be answered only by the most painstaking and careful investigation among actual consumers. Frequently, manufacturers are in a position to have this information at hand as a result of previous activities in the field. All too frequently they imagine that they have this information and proceed on half-baked assumptions which are either no longer true or, perhaps, never were correct.

In embarking upon so important a change in policy and procedure as that involved in issuing a new package, most manufacturers will want to make certain of the correctness of their picture of the consumer of their product. There are a number of organizations well equipped to conduct consumer researches, interviewing actual or potential consumers and determining their reactions, needs and desires by actual, in-the-field investigations. Frequently, the manufacturer's advertising agency is in a position, and possesses the facilities, for conducting such researches, although in many cases an independent organization is called upon as a specialist

in market and consumer research. Numerous federal agencies have conducted extensive market researches and investigations of the consumer. Among these are the various bureaus of the Department of Commerce and the Department of Agriculture. A number of private and semi-public agencies have likewise conducted extensive researches and the proper organization of research will, of course, involve an investigation of existing studies which have been made in consumer fields related to the problem at hand.

2. Distribution research: Equally important is the adjustment of the new package to the requirements, the customs and the rules of the distribution trades—both wholesale and retail—which will handle the container in its passage to the ultimate consumer. Many a product and many a package have fallen short of success because of a failure, on the part of the manufacturer, to properly investigate trade requirements. These may range from questions of identification and marking to trade habits regarding display. Important are trade price customs, discounts, customary units of distribution (quantities involved in the average order or shipment), assortments, etc. It is obvious that a package may be well suited for super-market distribution, but would fall short of success if distributed through specialty stores. A package which might succeed in one section of the country might be ill-adjusted to the particular needs of another section.

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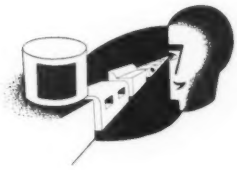
Research facilities in the distribution field correspond, in most respects, to those in the consumer field. Much work has been done by federal agencies, semi-public agencies, trade associations and trade publications. Frequently, market research organizations are called upon to conduct surveys of retailers or wholesalers to determine their facilities, customs and requirements.

3. Equipment: A third essential field of research is located within the manufacturer's own plant. What equipment is at present available for the handling of raw materials, the production of packages and the storage of finished containers. To what extent can this equipment be modified to meet the requirements of the new package. To what extent must the new package be restricted to avoid the artificial obsolescence of existing equipment. What equipment is available for purchase for the production or handling of proposed new containers. What



investment in machinery and equipment will be necessary to permit of economical production of the new package. Are existing machines capable of producing the proposed container. Will special machines be required. Can the proposed design be modified to permit the use of standardized equipment.

Such research, in most cases, must be conducted by the manufacturer's production staff. Frequently, machinery manufacturers are in a position to aid this research and to establish, in advance, fairly close limits within which the package design must fall.

4. Supplies: The fourth field of research is concerned with packaging materials and supplies. It is necessary to determine what the package supplying industries have made available to the manufacturer. Are new or improved materials applicable to the solution of the problem at hand. What is the price situation in respect to various competitive materials. What production problems will proposed materials involve.

It will be noted that all four fields of research must be investigated independently. It will also be noted, however, that the research in each of these four fields must be carefully coordinated, for the conclusions reached in any one field must inevitably modify the view taken of any other field. Having conducted preliminary researches in each of these fields, however, the manufacturer is in a position to proceed with preliminary design.

Design Procedure

Package design procedure naturally varies from company to company and from problem to problem For most companies, package design represents an occasional rather than a continuous event. For this reason, most companies seek outside aid and advice. The average executive does not consider himself either a technician or an artist and hence finds it wise to consult with those who can provide either or both forms of advice.

Two types of package designing service are available. The packager may consult an independent designer—an individual or organization—whose principal activity is to plan packages and, consequently, may be relied upon to have an excellent background of information and experience relative to the elements of package planning detailed in the foregoing paragraph. The services of such designers, being a professional service, are usually available on a retainer or on a by-the-job fee basis.

The packager may, on the other hand, seek the aid and advice of the designing divisions maintained by many of the package-supplying organizations. The size of such departments and their ability to aid the packager naturally varies from company to company, but it may safely be said—in respect to most of the larger package suppliers in each division of the package manufacturing industry—that such organizations are unusually well equipped to provide technical advice and are often equally well equipped to provide artistic services.

In many cases, packagers find it convenient to utilize both the independent and the company-maintained designer. The independent designer is in a position to achieve a very close working relationship with the company which hires him and thus to study the specific problems of that organization, particularly in respect to merchandising factors, intensively. He can, however, very easily lean upon the technical knowledge possessed by the designing and engineering divisions of the package-supplying firms.

Armed with the necessary data as to brand, product and market, the selected designer will be in a position to

proceed with planning the package. Experienced packagers frequently take great pains to make certain that any proposed designs are subjected to the criticism of all departments which will later be called upon to produce, distribute or merchandise the product. Sometimes this work is channelized through a "packaging committee." The tendency of such committees, however, to resort to one-sided and perhaps arbitrarily negative criticisms should be cautioned against, since such criticisms often reflect no weakness in the proposed package but, rather, an element of inertia and unwillingness to change on the part of the department making the criticism.

Introduction to Trade

Since most package designs are today redesigns, the packager is confronted with a major problem when a decision is made to replace an old package with a new one.

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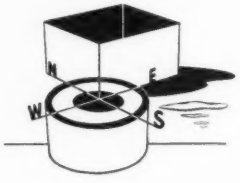
Between the design and production of a new or replanned package and its introduction to the consumer lie a series of merchandising problems which, while applying with differing emphasis to different situations, nonetheless appear to greater or less degree in every instance of such package change. These may be summed up as:

(1) The problem of physical distribution—of getting the new package into the store.
(2) The problem of minimizing or eliminating losses in disposing of old stocks and the kindred problem of speeding up the disposal of such stocks.
(3) The problem of retaining all possible news value pertaining to the change and of capitalizing upon the change with jobbers, dealers and sales clerks and with the consuming public.

Within the compass of the first problem arises the question of method to be followed in introducing the new merchandise. Should it be introduced simultaneously in all localities. Should the design change be made in several stages or should it be achieved in one jump. Should the change be made when dealer stocks are low or when they are high.

The method of greatest factory convenience would naturally call for making the change by the simple expedient of shipping out all of the old packages in process



and in stock and then starting to ship the new merchandise as ordered. However, this method would result in tremendous confusion on the part of both jobbers and dealers, in the creation of "shelf orphans" in the person of old packages lying on shelves while the new were being sold. Such unequal dates of introduction throughout the territory served would create dealer ill-will (among dealers having stocks of the old package) and result in complete loss of all the news and advertising values of the new package.

Hence, good practice has always called for an attempt to *achieve simultaneous introduction over a large territory if not over the entire national market.*

To achieve this, several methods are available. In the introduction of its Grape-Nuts package some time ago, the General Foods Corporation adopted the "equalization" method—shifting stocks among jobbers so that each would have an absolute minimum of old merchandise on hand at the time for introduction of the new package.

A second—and more usual—method calls for stock control initiated by the manufacturer's sales force. Here the salesman, being aware of the dealer's usual sales volume, is called upon to hold his orders down to the point where all stocks of the old package will tend to become exhausted at precisely the moment when the new package is to be introduced.

While this method is the one most easily practiced, it suffers from a number of drawbacks. First of all, it converts the salesman into a "non-salesman"—forces him to cut down orders rather than to encourage their increase in size. Secondly, it involves the danger of stock exhaustion in some stores prior to the date of introducing the new package. The loss of sales may here be negligible, but the loss of good-will on the part of the dealers who lose the sales (because of the over-ruling of what they will maintain was their better judgment) is often too great to be risked.

In spite of its practical and psychological disadvantages, this method is popular because it minimizes the

amount of stock left after the new package has been introduced. It throws the major burden of effecting the change upon the dealer's shoulders instead of on those of the manufacturer.

Another means of effecting a package changeover calls for the exchange of old merchandise for new at a given date. This is very seldom followed because it would involve a tremendous loss in freight, damaged goods, repackaging, overhead and other charges.

It will be seen that all these methods, with their varying advantages and disadvantages, involve a certain amount of friction and extra work on the part of both manufacturer and dealers. This can, of course, be minimized by careful planning. However, because of this friction and extra work, the balance is all in favor of reducing package changes to a single operation.

The question of making the announcement of the package change will naturally arise whenever such a change is considered. Such an announcement must break down into two parts—that going to dealers and that intended for the general public.

The question of regional or national changeover has its proponents on both sides of the fence. Those in favor of a regional change point out the possibility of moving merchandise gradually from east to west or north to south in "equalizing" stocks.

It may seem, from the foregoing, that the introduction of a new package involves so many hazards as to make its consideration something to be long delayed. Yet such is not the case. Difficulties have here been pointed out because they must be appreciated to be overcome. But the manufacturer who hesitates because the difficulties exist, has merely to look to the number of others in his field, who have easily overcome these difficulties, to understand that advance planning can reduce them to negligible disadvantages.

Design Testing Techniques

To test the physical characteristics of a package may require long and tedious laboratory work. Yet the problem is a relatively simple one, since scientific standards may be set up and scientific means of measurement may be utilized. The human factor can be largely eliminated.

In contrast, the testing of packages is a far more difficult job and one requiring different techniques and a different approach. It is perhaps for this reason that no fixed standards exist and testing is done—by that fraction of packagers who do it at all—largely on the basis of erecting a special testing structure to solve each problem as it comes up.

The fact is that most companies and most designers are in no position to undertake extensive tests. To most manufacturers the value of testing has not been sufficiently proved and the technique has not been sufficiently far developed to seem to offer returns of a value proportionate to their cost. Yet enough work has been done in the field to indicate that testing undoubtedly has a future, though that future may be limited to certain categories of products and certain manufacturing groups. It is the purpose of this article to classify the work that has already been done and to evaluate it, as a preliminary requisite if further work is to proceed.

Design testing falls into three broad categories:

1. Testing by Consultation—either with selected executive employees considered as experts, selected jobbers and retailers likewise considered as experts by virtue of their position in the field or with employees selected from office and factory staffs and considered as a restricted sample of the average consumer group.
2. Testing by Formula. A number of designers and some manufacturers have set up systems of testing whereby a package may be measured with greater or less accuracy against a series of qualities (or desirable features) which would be possessed to the fullest degree by the perfect package. Such testing measures are not the consumer's actual reaction (either in sample or in mass), but rather the correlation between the proposed package and an "ideal" deduced by a process of reasoning, presumably on the basis of previous experience.
3. Testing by Field Sampling. This type of testing places the proposed package or packages into the actual channels of trade and judges the effectiveness of the package or packages either by comparison with each other in terms of sales results or by comparison with the predecessor package.

Although the three methods are designed to achieve identical ends, it will be noted that the means adopted differ greatly in a number of respects, particularly in regard to cost and time elapsed before completion of the testing period. Each method has its weaknesses and its advantages. The case on behalf of Testing by Consultation is perhaps best phrased by one large manufacturer who does not conduct advanced consumer or dealer tests and who believes that the latter are of little value. He states: "We believe we know the 'elements' in design that will appeal. We believe the surprise element also has a value, because I have known of instances in other fields where a dealer claimed he had seen 'something like that' before, without realizing it was submitted to him in a 'test.' We also believe that design considerations must, of necessity, come under the decision of experienced people—people who seem to know what the public likes."

It is significant that this company is one which in its highly competitive field has achieved eminently satisfactory sales results, a strong profit record and a number of national awards for the excellence of its packages and displays. Two factors should be kept in mind in considering this statement, however. First, the company is in a high style field where frequent package changes are in order. Second, the nature of its field permits the company to use elaborate packages and thus to achieve almost any desired effect.

A number of other companies, particularly those with large staffs, are in a position to conduct fairly extensive tests without going outside of their own immediate organizations. This method offers one advantage in that it tends to keep the coming package change a comparative secret from competitors. Some large organizations call upon individual employees for comment. Others have found it undesirable to let the employee know that he is participating in any test, since the individual's viewpoint tends to become distorted the moment he or she is called upon to deliver an expert opinion. Individual employees who might prefer a less tasteful design in the field, tend to modify their actual preferences in an effort to demonstrate to the employer conducting the test their good taste or their knowledge of merchandising. For this reason some companies utilize more subtle methods of determining employee reactions. The opportunity to purchase holiday packages at a discount is sometimes used as a means of measuring general consumer preferences.

Testing by Consultation is, of course, a hit and miss method. Its principal function is to secure a relatively high degree of approval among those who will have to sell the package and the product within it. In one sense, it is not testing at all, but merely ascertaining, in

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advance, that everybody on the selling team thinks that the new container stands a pretty good chance and that everybody is therefore sufficiently enthusiastic to go out and push the sale of the product. When, however, such testing extends to the interviewing of substantial numbers of "typical consumers" (even though these may be merely plant employees or others available at low cost), Testing by Consultation begins to merge with field testing and thus begins to achieve a measure of the consumer's actual likes and dislikes rather than of the merchandising staff's understanding of what these likes and dislikes are probably going to be.

Testing by Formula has been more extensively carried on in recent years than ever before. At least two design organizations have promulgated extensive theories of testing. One formula, based on the use of photography, seeks to measure a series of qualitative factors including visibility, legibility, integrity, continuity, individuality, identity, utility, salesmanship, sponsorship, instruction, association, customer convenience and re-usability. Each of these qualitative factors is measured by a photographic method which seeks to evaluate its appearance at varying distances, its appearance when seen both in and out of focus, the value of its color and its appearance in relation to competitive background. The sum of all these aspects is totaled to determine a percentage of design efficiency. Results of an unusually high degree of accuracy are claimed by the sponsors of this theory, but the theory itself has not achieved wide sponsorship or utilization. While it may offer a uniquely effective method of measurement and comparison, it has not yet been proved satisfactory to the vast majority of package designers and must therefore be considered as still in the experimental stage as far as the majority of designers are concerned.

Another system of pre-testing is utilized by the designing organization of Georges Wilmet, Inc. This system consists of an analysis which, it is claimed, is based on organized knowledge of the motives which create a desire to own and to buy. Packages are rated against this standardized and organized check list and an index of package value is thus obtained. The system may therefore be applied to existing packages, competitive packages and dummy sketches of proposed designs. It may likewise be utilized to measure the improvements or damage involved when sketches are changed at the behest of a client. The sponsors of this system claim a close correlation between their own results and consumer tests by research organizations.

This system, like the one described previously, is at present being utilized by a single organization only and is therefore—as far as the majority of package designers is concerned—still to be considered as experimental. Both systems reflect the tendency, on the part of many concerned with design, to seek some absolute standards against which packages may be measured with a high degree of accuracy. While in this sense the sponsors of these systems are attempting to approach the scientific accuracy of physical or chemical tests, they realize that an absolute attainment of such accuracy is not too likely and that all tests must be watered with a good admixture of common sense. The attempt, however, shows much promise and may lead, in the near future, to the development of testing formulae which will be widely accepted.

Other designers have approached the problem much more conservatively and seek to test only single factors. Thus Alcott, Thoner & Marsh utilized Luckiesh's Legibility Table of Colored Letters on Colored Backgrounds as an aid in determining the visual impacts created by packages. The table values are, however, weighted in accordance with style and size and weight of the lettering being used. This design firm has also devised a Relative Distance Legibility test that is reported to have achieved successful results.

Similar tests seeking to measure single factors are used by a number of designers as preliminary guides to be checked further by field sampling. Field sampling tests are among the most difficult to conduct, yet, at the same time, they provide the most accurate measure of a package. This is true because they measure the ultimate consumer's reaction rather than any theoretical reaction which the consumer should have.

Field sampling tests are of varying types. In essence, they consist of placing differing packages under controlled conditions in retail stores and then measuring the sales created by each.

More frequently, however, tests are conducted in the retail store by investigators who question individual consumers. Some years ago, the Beechnut Packing Co. tested 23 proposed cartons by this method. The cartons were broken down into four groups of from four to seven cartons each, since it was felt that no consumer could provide an accurate judgment if confronted with the entire group of 23 cartons. Consumers were invited to tell which design they liked best irrespective of color treatment, which they liked next best and so on until the entire series had been arranged in order of preference for design. The same procedure was then followed with the customer expressing preference for color treatment alone.

The cartons which scored best in each of the four series competed in a final test after 15 of the poorer cartons had been eliminated. A separate study of competitive cartons was made to provide a comparison in this regard and a final study in which Beechnut cartons competed with competitive cartons was likewise indulged in.

It will be seen that such a procedure can be followed only where the potential sales of the product are sufficiently large to justify the expenditure of time, money and effort involved.

In a number of instances, manufacturers have limited their consumer tests to single factors and have thus increased the accuracy of the results obtained. One manufacturer, for instance, has conducted a number of tests to determine which of a series of cans appeared largest to the consumer. The can finally selected was a 10-oz. container of flat shape which achieved a far higher score than one of similar capacity, but utilizing a tall construction.

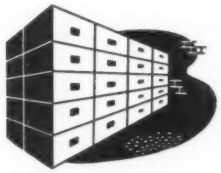
Merchandising Considerations

As with anything else in this world, the package that is best suited to its environment is most likely to survive and thrive. It is the purpose of this article, and the one which follows, to discuss in detail the varying environments to which a package is subjected and to which it must be adjusted in advance.

The merchandising considerations affecting package design are of three types, related broadly to the three stages of a package's transit from factory to consumption. Each stage makes its own demands upon the package. Each is of equal importance insofar as the demands of each must be satisfactorily met if the package is to enjoy a successful progress through warehouse and wholesale channels and through the retailer's hands to the point of use in the hands of the ultimate consumer.

Warehousing Considerations

As the product under consideration comes off the packaging line, it may be placed in temporary storage in the plant in which it has been packaged or in an adjacent warehouse. In all probability, it will again be stored in a wholesale warehouse or jobber's warehouse before it is trans-shipped to the retailer. In many instances it will be warehoused once again by the retailer before it reaches the selling floor. Warehousing, in any of the above aspects, makes five demands upon the package.



Identity: The product's outer container, which for warehousing purposes is the only visible package, must establish clearly the identity of the product. It must do so under adverse lighting conditions. It should be visible for warehouse employees to easily read the legend on the package no matter where it is stacked, whether on floor level or 8 or 9 ft. above the floor. This legend must establish identity not merely in terms of brand name, but in terms of style and kind of product if more than one item is covered by a single brand name. In some cases, it must establish the age of the product so that older goods may be moved out first. Frequently it must establish the quantity of the product or of the units of the product contained within the warehouse package. If these units are group-packed or bundle-packed or have any other special characteristics, these, too, must be considered as a part of the warehousing data which constitutes the necessary identity establishing information.

Divisibility: It is the special function of the jobber to buy in large quantities and to sell in small quantities. A warehouse package will therefore more adequately serve the jobber's convenience if it contains the number of retail sales units which the jobber customarily ships to the majority of his retail clients. This quantity is usually determined by the nature of the product and by customary trade discounts. It may be in tens, half-dozens, dozens, grosses or any one of a host of other quantity measurements, depending on the type of trade. It is, however, not always possible to economically package merchandise for shipment to the wholesaler in such small units. When this cannot be done, the large package or shipper will gain in utility if it possesses the virtue of divisibility. This may usually be translated to mean that the large package must contain, within itself, smaller packages or bundles containing the customary required number of retail sales units—let us say a dozen each. The type of divisibility possessed by the wholesale shipping package is a logical part of the identity establishing information which should appear on the outside of that wholesale shipper.

Weight and size: While under certain special circumstances substantial economies are possible by packing the largest possible quantities into a single wholesale shipper, there are counterbalancing considerations which must always be held in mind. Does the package which is proposed exceed the weight or size specifications placed upon it by the transportation agencies who will be called upon to handle it, i.e., the post office, the railroads or the trucking companies, as the case may be? Is the package too large or too heavy to be conveniently handled by shipping and warehouse employees? Is the package too bulky or too heavy to permit of easy storage, multi-layer stacking or subjection to any of the other customary conditions of shipment and warehousing? Unless the package conforms in every possible respect to these requirements, it will prove unacceptable, to a degree, to the average jobber and if it departs, in any major respect, from the rules laid down by transportation officials, it will of course be completely impractical and will be embargoed from shipment.

Sturdiness: Quite a substantial part of the wholesaler's operating expenses is represented by handling expense and breakage. An essential, therefore, for the

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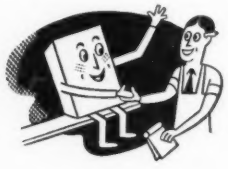
warehousing or shipping container is a degree of sturdiness which will meet and exceed any normal rough handling which the package may be expected to undergo in its transit to the retailer. Adequate measures of such sturdiness are usually to be found in the regulations of the Freight Container Bureau and other similar transportation agencies.

Trade custom compliance: Whereas all of the previous warehousing considerations might be logically deduced, there are still others which do not necessarily have a logical basis. These are considerations involving adjustment of the container to existing trade customs. Wherever possible, the wise manufacturer will investigate these customs and will seek to comply with them, no matter how illogical they may seem. It may be more economical and facilitate accounting to pack in decimal units, but if the trade custom calls for dozens and grosses, there is little sense in a single manufacturer attempting to buck this condition. In a number of trades and industries these customs have been codified in the form of Simplified Practice Recommendations, copies of which may be obtained from the Simplified Practice Division of the National Bureau of Standards of the Department of Commerce, Washington, D. C.

The U. S. Tariff Commission has issued an extensive survey of commodity packaging data as a guide to current practices in the packaging of typical commodities that move in domestic and international trade, copies being obtainable from the Commission, Washington, D. C.



The Bureau of Foreign and Domestic Commerce of the U. S. Department of Commerce has issued an elaborate study of export packing requirements, copies of which may be obtained from the Superintendent of Documents, Washington, D. C. (Modern Export Packing by Joseph Leeming. Price $1.00). Data and other government publications may be found in some published material, relating to packaging, compiled by the Business Information Service of the U. S. Department of Commerce.

Retailing Considerations

Identity: The individual product sales package must clearly establish its identity for the busy retail clerk. The necessary information must appear on that face of the package which is visible when the product is stacked under customary conditions on stock shelves. Thus on stocking boxes such information is usually placed upon the short end of the container and includes data as to brand, color, size, weight and quantity. Frequently data establishing identity for the consumer serves the dealer's purpose as well. Merchandise which is overwrapped or specially cartoned to facilitate shipments by the retailer to the consumer must, of course, carry identifying data printed or labeled on the outside wrap.

Convenience: A well-designed package will be one which is convenient for the dealer to handle and store. It must not be too large or too bulky, it must not be so tall as to be unstable or of such an unusual shape as to make for great inconvenience in positioning on stock shelves or other storage positions within the retail store.

Display: A well-designed package will be one which lends itself to display on the shelf, on the counter and in the window, except where the nature of the product precludes the use of any or all of these display points. The package must be recognizable and its principal wording or marking must be legible at the normal distances between the display point and the consumer. Products customarily placed on high shelves obviously require larger lettering than products placed at eye-level.

Self-salability: The increasing utilization of open display and the growth of self-service stores of all types have introduced a new retailing consideration. If the package is to move through self-service channels, it should obviously be designed so that it is self-explaining and capable of consummating a sale without the aid of the retailer's explanatory words.

Information: A well-designed package will provide both the dealer and the consumer with those types of information most logically required to aid in the consummation of the sale. Much of this information is required by law in respect to numerous categories of goods, as, for instance, the weight and composition information called for under the Federal Food, Drug and Cosmetic Act. Much additional information is frequently desirable to aid the retailer in explaining the product's virtues and to aid the consumer in utilizing the product.

Trade custom compliance: The retail trades, as well as the wholesale trades, have numerous customs which vary from trade to trade and which manufacturers

usually find it best to observe scrupulously. Compliance with such customs is, in most cases, essential if the package is to obtain the dealer good-will upon which sales must depend. On occasion, however, packages which violate trade traditions, but which otherwise facilitate dealer convenience, have been known to achieve outstanding success in large measure, because they brush aside an outmoded custom. An instance of this sort is found in the packages of canned goods labeled with a bare spot where the self-service grocer can mark his price.

Consumer Considerations

Convenience in storage: A well-designed package will take note of the conditions to be met in the home.

Medicine chest items which are too tall for the usual medicine chest shelf obviously suffer a handicap. Numerous other such instances of failure to provide for consumer convenience in the home can be found in virtually any retail store.

Convenience in use: Even of more importance is the factor of consumer convenience in use. Much attention has been given to this in recent years. Bottles are frequently designed to facilitate hand-gripping. Numerous types of closures have been developed with consumer convenience in mind. Numerous packages which must be kept in refrigerators are today made in squatter form than formerly to facilitate storage and use. Pouring lips, handles and a host of other devices are likewise developments designed to facilitate convenience in use.

Re-usability: Certain specific types of products can profit in their sales potentialities by the re-usability or potential after-use of their packages. In some cases such re-usability involves the marketing of refills of the same product which originally appeared in the re-usable container. In such instances re-usability serves to bind the consumer to the continued use of the given brand. In many other instances—particularly with gift merchandise—re-usability is simply a device for increasing the apparent value of the product to the consumer and thus encouraging sale.

Reclosure: For those products that are not consumed immediately upon the opening of the package, the consumer must be provided with the adequate possibility of convenient package reclosure.

Information: Consumers increasingly demand fully adequate information on the package relating to the nature of the product, its grade, size, quantity and type. Much such information is required by law. Many manufacturers have, however, found that in addition to meeting legal requirements, they may profitably place upon the package data suggesting additional uses of the product, illustrations demonstrating the ideal way in which to use the product and such other items of information as will insure greater consumer satisfaction and convenience.

Compliance with tradition: Just as both the wholesale and retail trades observe so-called trade customs, so do consumers tend to follow traditions which they may or may not completely understand. It is well for the packager to anticipate, in advance, and to comply with consumer traditions. Certain color schemes, shapes or design elements have become associated by consumers with categories of merchandise. Most manufacturers find it best to stick fairly closely to such traditions where they exist.

Production Considerations

In making certain that the package design and structure is adjusted to the environment which the package will meet after it leaves the packaging plant, manufacturers and designers must never overlook an equally important series of considerations—namely, the production considerations. Many a manufacturer is burdened with extra costs which place him in a difficult competitive position simply because some minor portion of his package structure (which could have been changed or eliminated when the design was new without any sacrifice of effectiveness) demands hand operations or slows up machine operations or otherwise limits production and raises costs.

Storageability of Material

Package supplies and parts must be available at package production lines in sufficient quantities to meet big demands. Hence, every packaging plant must maintain a storage reservoir of these materials. Obviously, the more bulky these are, the more storage space will be required. Few manufacturers give adequate consideration to the difficulties and the expense of such storage. Yet when adequate consideration is given, decided savings can frequently be effected.

Other things being equal, packages which can be stored in collapsed form have an advantage over those which require their full erected space for storage. Other things being equal, telescoping packages or nesting packages have an advantage over types that do not afford storage space economies. Packages in reshipper cartons —such as are almost universally used for glass bottles— provide distinct storage advantages. They provide advantages, too, in the simplification of materials handling in the storage room, the production room and the shipping room and in the elimination of waste disposal problems that would arise if separate packages were used to bring the bottles into the plant and others to get the bottles out of the plant.

Another consideration respecting storage, which is too often overlooked, concerns the conditions of storage required by the packaging material. Some materials can be stored indefinitely and thus permit the manufac-

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turer to take advantage of quantity buying and quantity shipments. Other materials are subject to deterioration, under extended storage, and thus limit buying in accordance with short term production plans. Still other materials require special storage facilities, i.e., moisture and temperature control, special racks, limited height stacking, etc. While storageability alone will seldom prove the deciding factor in the choice of packaging materials or package parts, it remains one factor which should be considered along with many others.

Mechanization Possibilities

In the highly mechanized plant, virtually every package change must be subjected to the question, "Can it be worked into the high speed production lines?" Even in plants where handwork prevails or where mechanization is used to only a limited extent, it is important to consider a proposed package on the basis of its mechanization possibilities. Many a manufacturer is today condemned to one or more hand operations simply because of a failure to consider these points in advance, in the days when his production was small enough to preclude the use of mechanized equipment.

If the proposed new package can be produced on a fully mechanized line, that is of course all to the good, even though in the beginning it may prove more economical to utilize hand labor for all or part of the packaging operations while volume sales are being built up. If the package cannot be produced entirely on fully mechanized lines, the manufacturer would be wise to estimate his production costs not merely on the basis of present volume, but on the basis of potentially expanded volume. He may find, in so estimating, that the new package is undesirable in its proposed form because any substantial expansion of production would require too great an expansion of labor force, of working area or would present serious materials handling problems.

Conformity with Machine Requirements

Whether or not the proposed package will immediately be produced on a mechanized line, it is always important to check the proposed design against the requirements of the machines which will produce it. Frequently, small —virtually unnoticeable—changes in the basic design will make it possible to operate machines more efficiently. To take a single example, consider a proposed label of circular design. If this is to be applied by hand, the label will be registered by the hand operator without great difficulty. If, however, machine application is to be utilized, a circular label, having no "keys," will jog around in the reservoir of the labeling machine and will be applied time after time with its type slightly slantwise. To overcome this difficulty after the package has been adopted, one or more hand operators will have to readjust each label as it comes off the machine, with a consequent substantial drop in production efficiency and a tremendous increase in production expense. If, however, this possibility is anticipated when the design is new and a key is provided for the label (in the form of one straight edge or some small extension knob or rosette which can be worked into the design), hand labeling will be no more difficult and machine production will be greatly facilitated. Since the label has to be die-cut in any event, no increase in production costs will occur.

There are numerous other such instances, a few of which are illustrated here and others of which are described and illustrated in the particular sections of this Catalog to which they most directly apply. Suffice it to say that the wise packager will always anticipate future production requirements as well as those placed upon him by his present production methods. He will check with and secure the cooperation of machinery manufacturers who, by and large, will find it to their interest, as well as in the interest of the packager, to advise him correctly even though no immediate machinery sales may be in prospect.

Alternative Costs

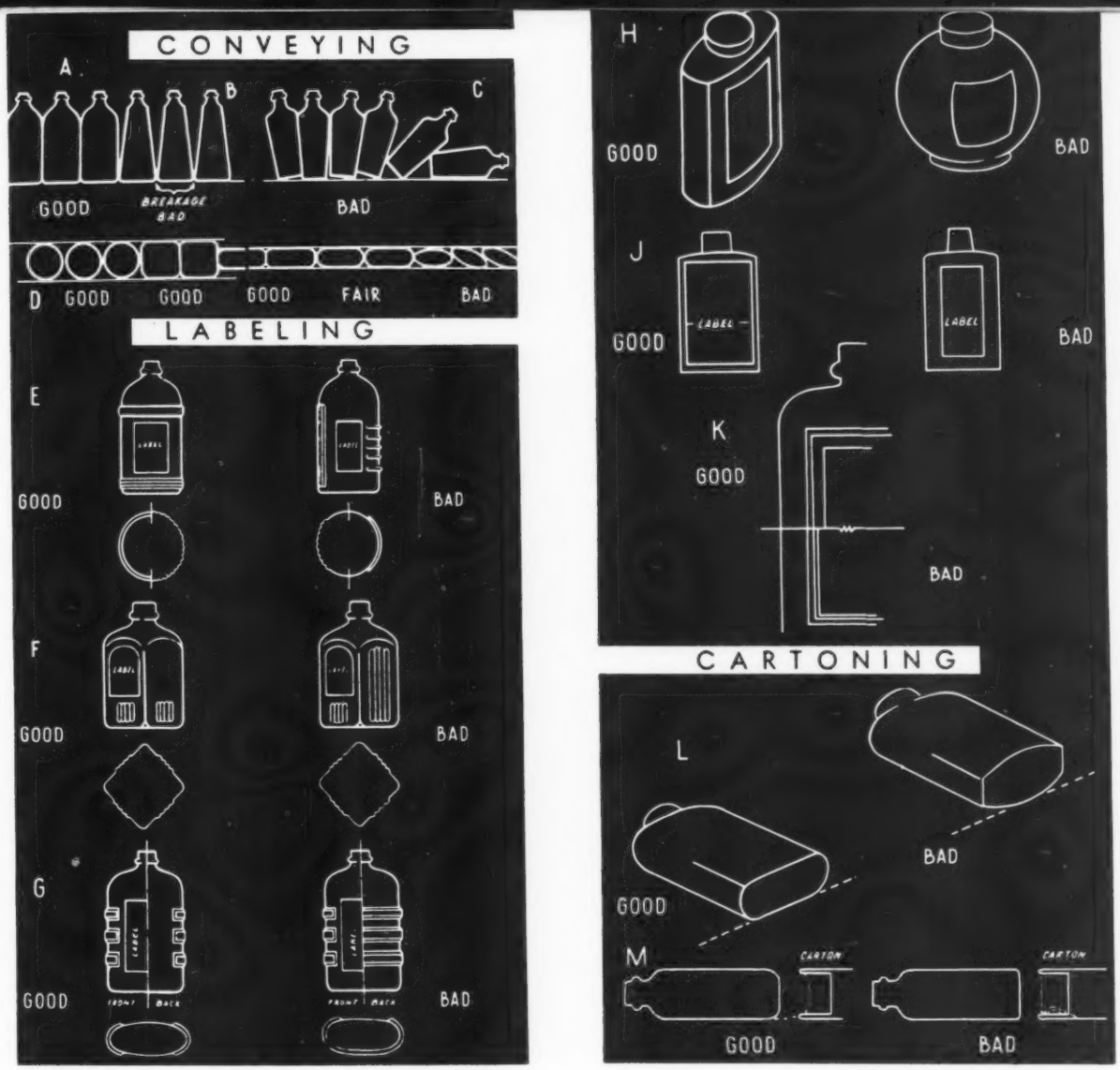
The package designer and the merchandising staff are usually concerned with the package only from the point of view of potential sales, i.e., they are concerned with the merchandising considerations of design. Because of this, they naturally tend to ignore alternative designs which offer the possibility of cost reductions. It is therefore up to the technical and production staffs to check every proposed design on the basis of alternative costs. Frequently, it is possible, by such checking, to show how all the merchandising considerations can be retained while effecting a substantial saving through the use of some modification of the proposed original design.

Anticipating Peak Production

In estimating production costs and production possibilities for a new package, manufacturers frequently work on the basis of anticipated three-month, six-month or annual production figures. Production, however, seldom runs along straight lines, particularly for new products. Demand reaches seasonal peaks or otherwise fluctuates and equipment and working space must be available to handle peak production, unless sufficient storage capacity is maintained to permit shipments from prepackaged stock during peak periods.

A package design, which may cause no difficulties during periods of ordinary anticipated demand, may tie up an entire plant during a peak production period unless the packaging lines have been laid out in a way which will anticipate the possibility of high seasonal demands. In judging the design, therefore, its workability on the production lines should be considered, *particularly* in respect to the peak period since, if it can be handled at this time, it will present no difficulty at any other time.

In many plants, highly mechanized equipment is utilized for package production and is run only intermittently since the over-the-year production requirements cannot



Good and bad elements in design considered from a production viewpoint. **A.** Bottles cannot tip. **B.** Single point of contact causes breakage. **C.** High single point of contact causes tipping. **D.** Oval shapes tend to turn and wedge; rectangulars or rounds do not. **E-F-G.** Good design avoids necessity for hand-locating of packages prior to labeling. **H.** A simple curve presents no labeling trouble; a compound curve offers great difficulties. **J-K.** Label should be easy to spot and slight variations should not be noticeable. **L.** A flat non-rockable side is desirable. **M.** A good radius on the container base helps it slide smoothly over the carton edge.

utilize the full capacity of the machines. In such instances, manufacturers must carefully consider their alternatives. On the one hand, it may be practicable to utilize slower speed machines, semi-automatic or even hand operations and to make up for higher labor costs by a reduction in machine investment. On the other hand, the economies of high speed production—even though used only intermittently—may more than make up for the added investment involved. Frequently, in plants producing more than one product, it is possible to so plan production lines as to permit the use of a given machine for the packaging of several items. In planning a new package, as an addition to an existing line, the manufacturer will be wise to consider the possibility of utilizing the excess capacity of certain of his existing machines by means of size adjustments. On the other hand, in purchasing machinery, production men frequently show great interest in questions of flexibility, anticipating the possibility of a change in package size or shape or of additions to the line being added later.

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Color and Reproduction Methods

Many theories and systems for color identification and color selection have been developed and a number of these have been applied, by package designers and package users, to the solution of their packaging problems. No single theory has, however, been universally accepted and most packagers and designers continue to work by what might be termed rule-of-thumb methods. This is, perhaps, due to the complexity of the color problems affecting a package design. It is not sufficient in planning a package, to decide upon the ideal colors and then to proceed to put them to use. Numerous considerations intervene to alter the choice, including such mechanical considerations as the reproduction process and the material to be colored, such merchandising considerations as the tastes of the market to be reached and such distribution considerations as lighting on display, shelf appearance, distance from which the package will be viewed, etc.

Among the various systems for notation and color relationships, certain common characteristics can, however, be observed.

Color Notation

No matter what system of color description is used, it must acknowledge the fact that all color possesses three characteristics. Therefore, to describe color completely as it is seen by the eye, it is necessary to use three dimensions. Just as in measuring a box we give its length, width and depth, so, too, in measuring color, we include three dimensions. *Hue*, *Value* and *Chroma* are terms most often used to describe color as seen by the eye.

Hue is the quality by which we distinguish one color from another, as red from yellow or yellow from blue. Value is the lightness or darkness of a color as compared with a scale of grays from white to black. Chroma is the strength of a color or the quality by which we distinguish a strong color from one that is "grayed."

To apply these three dimensions, we first describe the hue of a color, as green, then designate value or the lightness or darkness; and to complete the description, give its chroma, whether it is a rich or a grayed green.

Primary considerations in the selection of package colors are visibility and legibility. The principle to be observed here is that of sufficient contrast in value. Value differences, without regard to hue or chroma, may make or mar the result. Value contrast will make lettering or type, for example, legible or illegible. A color of middle value will be least distinguishable on a color of equal value and the greater the contrast in value, the greater the legibility.

In this connection, bear in mind that simultaneous contrast affects value contrast. A neutral gray of middle value appears lighter against black and darker when contrasted with white. The same thing holds true with any given hue.

The question is frequently raised in connection with a package design, "Is it in color balance?" There is a principle known as the doctrine of chromatic equivalents which aims to establish color balance in a design. Based on the fact that white light is composed of all the spectral colors in certain proportions, this theory maintains that in order to be in perfect balance, the chromatic elements of a design should be adjusted so that if all the constituent colors were mingled on the retina, a neutral gray would be achieved. No hue would then be noticeable. This can be demonstrated by placing segments on a disc in the proper proportions and spinning them rapidly on a wheel. If they appear to the eye as a sensation of neutral gray, the design is said to be in balance.

Relationship of Areas

To achieve this in design, the areas of one color to be used with another or the areas of many colors in combination should be determined by the power of the colors employed. For example, if we wanted to use a combination of a middle value yellow-red of fairly strong chroma with a blue of a low value and weak chroma, we would use a much larger area of the blue than of the yellow-red. In all principles of color relationship areas of white, black and gray are considered neutral and are ignored.

The general principle covering the areas of color in a given relationship may be stated thus: A color of stronger chroma and higher value should occupy the smaller area and a color of weaker chroma and lower value should occupy the greater area. This does not mean that a good design could not be built using a reverse method, but it is fairly safe to follow the rule.

There are other considerations besides color harmony or color contrast in the selection of color for packaging. Ask yourself these questions. Is the color appropriate to the product packed? Is there resistance to certain colors in your particular field of selling? Does the color give high visibility on display? Is the name legible

Cross References: Boxboards: Types and Selection, page 32; Can Decoration Processes, page 240; Printed and Lithographed Labels, page 300; Transparent Labels, page 308; Embossed Seals, page 310; Paperboard Counter Displays, page 349; Lithographed and Printed Window Displays, page 351; Package Printing Machinery, page 490; Printing Inks for Packages, page 496; Surface Coatings, page 502; Roll Leaf Stamping and Embossing, page 506.

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Gerber's
SMALL CUT
GREEN BEANS
Young and Tender
NET WEIGHT 15½ OZ.
SMALL CUT
GREEN BEANS
PACKED BY
GERBER PRODUCTS CO.
FREMONT, MICH.
THE MAKERS OF GERBER'S FOODS FOR BABIES
BEAN AND CHEESE CASSEROLE
3 tablespoons butter
3 tablespoons flour
1½ cups milk
½ lb. cheese, cut small
Salt and pepper to taste
1 can Gerber small cut beans, drained
Tomato slices
Make a white sauce of the butter, flour and milk. Add cheese and salt and pepper. Stir constantly until cheese is melted. Add beans. Pour into a buttered casserole (5 cup capacity). Top with tomato slices and bake in a moderate oven (375° F.) until cheese has browned. Serves 4-5.

2

1. Lithographed label combining two direct-color illustrations with color line reproductions. Note the realistic effects achieved in the vignette of the can contents and the recipe illustration. Courtesy The U. S. Printing & Lithograph Co. **2.** Gravure printing applied to the reverse side of moisture-proof transparent cellulose. **3.** Letterpress printing in reverse on transparent cellulose. **4.** Surface printing in aniline inks on transparent sheeting. Courtesy Shellmar Products Co. **5.** Rotogravure printing on foil stock. Note the ingenious inclusion of the foil color as an essential element of the design in lettering and shading. **6.** Rotogravure printing on paper-backed foil with substantial portions of color overlaid onto white. Foil border and limited bare portions add attractive elements to design.

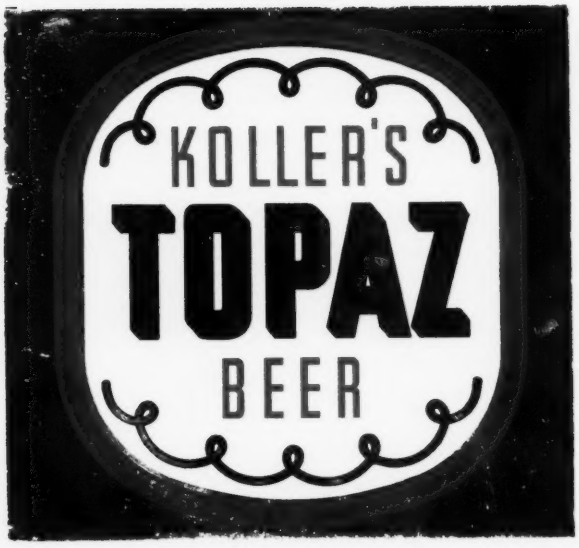
1 Courtesy Reynolds Metals Co., Inc.

Merry
Xmas

3

SEASONS GREETINGS

4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BEER

5

COPYRIGHT 1936
CONTENTS 12 FL.OZ.
Stag
Extra Dry
Pilsener
Beer
BREWED AND BOTTLED BY
GRIESEDIECK WESTERN BREWERY COMPANY
BELLEVILLE, ILL.

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and the typography simple and easy to read? Is the color distinctive from competitors' packages? Does the color selected help to make your package easily remembered? Does the color help or hinder the design? Have you selected colors which are capable of conversion into inks which will withstand the chemical action of the product; will impart neither color nor odor to the product; will not rub, fade or check and do full justice to the original design?

Legibility

Many factors contribute to the legibility of package designs and package copy. Yet, by and large, it can be said that packagers in past years have leaned over backwards to achieve legibility at great distances from the eye. As a consequence, some packages present an unattractive effect when held at arm's length—as they often are in modern stores nowadays—simply because they have been designed for maximum legibility at an approximate distance of from 15 to 25 feet.

Studies of readability of type have led researchers to the conclusion that light, design of type face, type size and color contrast are major factors in legibility. The packager can seldom control the light under which his package will be seen and must, therefore, assume below average conditions to provide himself with a margin of safety.

Type faces vary in visibility according to a number of factors and techniques have been worked out for measuring this visibility experimentally. By and large, it may be said that the simpler faces are more easily read although this is not always necessarily the case. Readability varies sharply with changes in type face. Luckiesh's studies show an extremely sharp rising curve of readability as type sizes increase from 5 to 6, 8 and 10 points. From 12 points onward the curve flattens out greatly, 12 point type being well up in the higher range of visibility.

A great deal of work has been done in the study of the legibility of color combinations. Most researchers agree on the following general order:

black figures on yellow background
green figures on white background
blue figures on white background
white figures on blue background
black figures on white background
yellow figures on black background
white figures on red background
white figures on green background
white figures on black background
red figures on yellow background

It is interesting to note that the data sighted here contrasts sharply with the popular conception as to the high visibility of reds. This color first appears in the seventh of the combinations here sighted.

Illustration

A number of different illustration processes are available in reproducing a design for a package or a display. The principal ones are the following:

Line plates: These are photo-engraved plates reproducing drawings in actual solid line. They cannot be used to reproduce photographs, wash drawings or paintings. They are very widely used in packaging, particularly where high-speed printing is utilized and where the package paper stock is of a rough character. Most paper bag illustrations are line reproductions.

Halftone: The halftone process permits the reproduction of fine shadings of tone by breaking the design up into a series of smaller or larger dots which join together before the eye to create the shadings of the illustration. Virtually all black and white illustrations made from photographs are produced by the halftone process. Fineness of detail varies with the fineness of the screen utilized in producing the halftone engraving. For printing on rough stock, screens having a relatively low number of lines to the inch are utilized. For finer and smoother papers, finer screens can be used with a consequent improvement in the retention of detail.

Line color: It is possible, by utilizing a number of line plates, each printed in a different color, to reproduce relatively complicated designs of an attractive and colorful nature. This procedure is very frequently followed in certain branches of the packaging field, particularly in producing bags, envelopes and certain box wraps.

Process color: For finer and more detailed color work, engravings are made utilizing the halftone screen on each of a series of color plates. By combining or overprinting red, yellow and blue plates, it is possible to achieve the appearance of a full range of all the colors in an illustration. This effect is created because the eye does not see the individual dots reproduced by each color plate. These tend, rather, to merge to form the desired intermediate colors. The exact color achieved in any portion of the illustration depends upon the proportion of red, yellow or blue dots falling on that portion of the illustration. Process color plates are made photographically, the original color illustration or drawing being put successfully through differing filters to separate the red, yellow and blue elements composing the colorful illustration. Almost invariably a fourth plate is utilized and printed in black to provide definition of detail and firmness of outline.

Direct color: With the development of processes permitting the making of color photographs, greater realism has been achieved in color reproduction through what is known as the direct color method. The separation of the color elements in the illustration is achieved in the original photographic camera rather than by filtering the color illustration. By this process, it becomes possible to photograph in full color the object to be illustrated. Moving objects, the human form, fruits and vegetables and other hard-to-catch subjects are here reproduced in full beauty and with the utmost realism by this process.

The printing of direct color plates follows the procedure which applies to that of reproducing any process color illustration, the essential difference being in the "directness" of the color separation photograph. In very recent years, this process has achieved extremely

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wide application in packaging. A very substantial majority of all can labels today carry direct color reproductions illustrating the appetizing, eye-compelling appearance of the products within. Direct color photography is also widely utilized for displays and in many other instances where the character of the package permits use of fine printing or lithography methods and where the purpose of the package makes the use of colorful realistic illustrations desirable.

Printing Methods

Four basic printing methods apply to virtually all package printing, although the exact details of the process to be utilized will vary widely. Thus the corrugated container and the fine printed transparent cellulose bag may both carry illustrations reproduced by the letterpress process, although one will use the process in a relatively crude form, while the other will use it in a state of the utmost refinement.

Lithography: The lithographic process is based upon the fact that certain types of surfaces will accept printing inks while other types will reject the ink. The non-image areas of metal plates (which today have largely replaced the stones originally used) are treated so as to be ink repellent. The image reproducing areas are roughened or otherwise treated so as to accept the ink. Thus the plate coming into contact with the ink distribution apparatus of the press receives ink only in those areas where it is desired that this occur. When the paper then comes into contact with the plate, it likewise is printed only in the desired areas.

Letterpress or relief printing involves the inking of raised areas. Type of halftone dots or those portions of the line plate which will reproduce the illustration are raised above the remaining portion of a plate. This effect may be achieved in many ways. In the case of type, it is achieved by casting. Line cuts and halftones achieve it by etching with acid. But irrespective of the way in which the plate is made, the essential point to remember is that the ink roller will only touch the raised surfaces and that these, in turn, will be the only surfaces touching the paper and transferring ink to it.

Gravure or intaglio printing utilizes a diametrically opposite method from that used in letterpress work. The areas which are designed to reproduce the image are recessed into the plate. Ink is rolled over the entire plate and then removed from the raised surfaces by the passage of a knife or doctor blade. When the plate comes into contact with the paper capillary, action or direct adhesion causes the ink to be transferred from the depressions in the plate to the paper.

Silkscreen: This process is used in display production in the making of decalcomanias and (a recent development) in decorating corrugated containers. Automatic machinery has recently been devised to mechanize what was formerly a hand process. In silkscreen work, a fabric screen is treated with wax or similar materials so as to make the treated section impervious to ink. Placed over a sheet of paper (or metal, wood, etc.), the screen then permits the passage of ink only through the untreated portions. Thick inks or paints are generally utilized and are racked across the screen which is held in firm in a wooden or metal frame. Basically, the silkscreen process is a refinement of the simple stenciling process with which every schoolboy is familiar.

Press Types

An extremely wide range of printing press types has been developed to meet the varied needs of packagers. The following description is not designed as a detailed discussion of these types, but merely to describe the basic description upon which such presses run. A more detailed description will be found in the printing section of this volume.

Flat bed presses: Here the printing surface is flat and is set on a movable bed designed to roll alternately past inking rollers and past a cylinder over which the paper travels. Thus each portion of the printing surface comes into contact with the proper portion of the paper sheet after each inking. Flat bed presses are sheet fed.

Web presses: It is frequently economical to feed the paper from a roll so that it may pass through a number of printing and processing steps, as part of a fast-moving web, before it is finally cut up into individual sheets. In such cases, plates are used only where the printing surface has been rounded to cylindrical form and mounted on a revolving cylinder. One side of this cylinder comes into contact with the ink roller, the other side comes into contact with the moving web. The surface of the cylinder moves at the same rate as the paper web.

Offset presses utilize multi-cylinder systems in which the plate cylinder transfers ink or "offsets" to a rubber-blanketed impression cylinder which, in turn, transfers it to the paper. This method of printing has certain advantages in terms of possible high speed and refinement in detail. It is very widely used in the lithographic industry.

Gravure presses apply ink to the engraved copper cylinder which then revolves past a so-called "doctor" which wipes surplus ink off the cylinder surface leaving ink only in the etched recesses. The depth of the etching determines the amount of ink carried by the etched cells. Both offset and gravure presses, like letter-printing presses, may be of the flat bed or the webbed type.

Decalcomania

Decalcomanias are a form of display or package decoration in which the desired design is lithographed onto a carrier sheet of paper which has first been coated. This permits the transfer of the design from the paper to any other desired surface—i.e., a glass container, a store window, a metal fixture, etc. When used on packages, delcalcomanias have the advantage of providing a die-cut or filigree effect since the design need not be of an all-over coverage type. This is particularly desirable at times in bottle labeling.

PACKAGING LAW

Section Two

Pages 19 to 30

THE FOOD, DRUG AND COSMETIC ACT

REGULATIONS AFFECTING SPECIAL TRADES

STATE AND LOCAL LAWS

TRADE MARK AND COPYRIGHT PROTECTION

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The Food, Drug and Cosmetic Act

Most important, most drastic and broadest of all laws affecting packaging is the Federal Food, Drug and Cosmetic Act of 1938. In some way or other, this Act affects from 70 to 80 per cent of all packages placed upon the market.

The present Act is the most recent of a series of federal enactments which began with the passage, in 1890, of a law prohibiting the importation into the United States of adulterated or unwholesome foods, drugs or liquors.

In 1906, after prolonged discussion, a Food and Drug Act, known as the Wiley Act, was passed and remained in effect until superseded by the present Act. In May of 1935, the first draft of the present Act was submitted to Congress and after several revisions and the taking of thousands of pages of testimony, the present Federal Food, Drug and Cosmetic Act was passed and signed by the President on June 25, 1938. A later bill postponed the effective date of certain mandatory labeling provisions to January 1, 1940, and the effective date of other provisions to July 1, 1940. Since these postponement dates have now been passed, the Act is fully in effect.

The Food and Drug Administration, ordinarily in the Department of Agriculture, was transferred to the Federal Security Agency effective June 30, 1940, under Section XII of the President's Reorganization Plan No. 4. The personnel of the Administration was not, however, changed and continuity of administrative procedure has been maintained.

The Food, Drug and Cosmetic Act is a very complex document made further complicated by the multiplicity of rulings and regulations issued under it. It is impossible, therefore, in a general description of the Act, to cover every point that may arise in the repackaging of any given product. The following sections, however, discuss the more general applications of the Act as they affect packaging.

Packagers are advised to consult with the local offices of the Food and Drug Administration or with their attorneys before entering into the production of any package, package part or label which might come under the regulation imposed by the Act.

Packaging Provisions

Packaging provisions of the Act differ slightly in their application to foods, drugs and cosmetics. All three categories of products are covered by a provision against packaging under insanitary conditions which may lead to contamination with filth or may render the product injurious to health. All three categories likewise are covered by a provision against the use of containers composed, in whole or in part, of any poisonous or deleterious substance which may render the contents injurious to health. Failure to conform to either of these provisions constitutes adulteration.

Cross References: Merchandising Considerations, page 11; Production Considerations, page 13; Regulations Affecting Special Trades, page 25; State and Local Laws, page 28; Package Inserts, page 314; General Considerations in Machine Installation, page 378; Check-Weighing Scales and Devices, page 386.

Containers for all three categories of products must not be so made, formed or filled as to be misleading. Products in such containers are subject to the Act's penalties for misbranding. As an indication of the types of containers falling under this provision, the Chief of the Eastern District of the Food and Drug Administration provided the following list of factors contributing to deceptive packages:

1. Glass Bottles
   (a) Thick glass
   (b) Panels
   (c) Excessive height
   (d) Indented bottoms
   (e) Irregular shapes
   (f) Magnifying shapes
2. Opal Jars
   Same as 1; also raised covers
3. Cardboard, Fibre and Metal Containers
   (a) Excessive size (slack-filled)
   (b) False bottom
   (c) Indented bottom
   (d) Raised covers
4. All Types of Containers
   Oversize cartons
5. Facing
6. Deceptive Colored Wrapping
7. Excessive Wrappings
8. False Packing

A number of attempts have been made to achieve, by rules or formula, compliance with the misleading-container provisions of the Act. Best known of these is the so-called Bristol formula for the manufacture of reduced sizes of cartons to more nearly fit tubes of tooth paste. The formula is described on page 22 and 23.

Manufacturers who pack odd-shaped bottles in cartons have been confronted with the possibility of falling under the deceptive packaging provision because the carton fill often falls as low as 25 per cent. Where the bottle itself is not deceptive, some manufacturers have recently endeavored to correct possible deception of the packages by printing a facsimile or reproduction of the bottle on the carton label. The Administration has indicated that if this is done in such a way as to show the exact size of the bottle, possibility of deception will be materially reduced.

Another formula, developed by the State of North Dakota in the enforcement of the State Food and Drug Act, is used for determining whether bottles are deceptive. The formula is intended to contrast the true capacity with the apparent capacity, since bottles made of thick glass or with panels sunk in the sides or bottoms or bottles of odd shapes or with long necks appear to have a greater capacity than they actually possess.

North Dakota declared as normal, glass containers appearing $1^1/_2$ times their capacity. That is, if the external volume of the bottles plus the volume of any panels or outside indentation is not more than $1^1/_2$ times the capacity of the bottle, then the containers are considered to be normal. This rule has been applied to 2- and 4-oz. glass bottles.

The Federal Food and Drug Administration has done some investigation on bottles of larger size which would indicate that the ratio of apparent size to actual capacity becomes progressively less as the size increases.

Many types of deception cannot be covered by formula (or have not to date been covered by formula). The shape of an article may throw the package into the deceptive class as, for instance, in the case of chocolate bars which have been excessively thinned out to provide an extremely large ratio of package face and weight. Deceptive colored wrapping applies particularly to the use of transparent colored materials as, for instance, the use of an orange transparent film to wrap partially smoked fish. This is interpreted as having the effect of giving the fish a rich color and, hence, the appearance (the deceptive appearance) of being fully smoked.

Much difficulty has been had by manufacturers of products which settle after packing, such as starch, talcum powder, cocoa and the like. A recent formula, negotiated with the Administration by the Toilet Goods Assn., applies to powder containers in particular, but may later be found to apply to other materials such as those cited above. Under this understanding, containers will be filled to the top and then agitated so that settlement takes place. After settlement, the container will again be filled to the top. If at any time in the future the powder has not settled to a point midway between the top of the container and the point to which the first filling settled, the percentage of fill will be judged to be satisfactory. Agitation will not be required following the second filling of the container beyond that which will naturally occur in standing or in transit.

Provisions Affecting Labeling

The terms "label" and "labeling" are not used synonymously in the Act. The term "label" is defined as a display of written, printed or graphic matter upon the immediate container of any article and a requirement that any word, statement or other information also appears on the outside container or wrapper of the retail package of such article or is easily legible through the outside container or wrapper. The term "labeling" means all labels and other written, printed or graphic matter upon any article or any of its containers or wrappers or accompanying such article. In general, required state-

OFFICIALS ADMINISTERING THE FEDERAL FOOD, DRUG AND COSMETIC ACT

Secretary of Agriculture: Claude Wickard

Food and Drug Administration:
- Commissioner of Food and Drugs: W. G. Campbell
- Assistant Chief: Dr. P. B Dunbar
- Assistant to the Chief: F. B. Linton
- Chief Educational Officer: Ruth de Forest Lamb
- Principal Technical Adviser: C. W. Crawford
- Interstate Division: L. D. Elliott
- Import Division: A. E. Taylor
- Division of State Cooperation: W. S. Frisbie
- Drug Division: T. G. Klumpp
- Food Division: W. B. White
- Microanalytical Division: B. J. Howard
- Pharmacology Division: H. O. Calvery
- Vitamin Division: E. M. Nelson
- Bacteriology Division: A. C. Hunter
- Color Certification Section: H. T. Herrick
- Cosmetics Division: Dan Dahle

FIELD SERVICE

Eastern District:
- Atlanta Ga.: Room 416, Federal Annex. J. J. McManus in charge.
- Jacksonville, Fla. (substation): Room 334, U. S. Court House and Post Office. W. Stokes in charge.
- Baltimore, Md.: Room 800, U. S. Appraiser's Stores, Gay and Lombard Streets. F. L. Wollard in charge.
- Norfolk, Va. (substation): Room 215, Post Office Bldg. Jas. C. Pearson in charge.
- Boston, Mass.: Room 805, U. S. Appraiser's Stores, 408 Atlantic Avenue. Geo. H. Adams in charge.
- Providence, R. I. (substation): Room 409, Federal Building. A. E. Ledder in charge.
- Buffalo, N. Y.: Room 415, Federal Building, S. Division and Ellicott Streets. T. F. Poppe in charge.
- Pittsburgh, Pa. (substation): Room 438-D, New Post Office Bldg. D. F. Fisher in charge.
- New York, N. Y. (Eastern District Headquarters and New York Station): Room 1200, U. S. Appraiser's Stores, 201 Varick St. W. R. M. Wharton, Chief of Dist., in charge.
- Newark, N. J. (substation): Room 438, New Post Office Bldg. T. C. Maraviglia in charge.
- Philadelphia, Pa.: Room 1204, New Customhouse, 2nd and Chestnut Streets. C. S. Brinton in charge.

Central District:
- Chicago, Ill.: (Central District Headquarters and Chicago Station) Room 1222 New Post Office Building, Van Buren and Canal Streets. J. O. Clarke, Chief of Dist., in charge.
- Detroit, Mich. (substation): Room 908, Federal Building. V. F. LaPiana in charge.
- Cincinnati, Ohio: Room 501, Post Office Building. S. A. Postle in charge.
- Cleveland, Ohio (substation): Room 503, Federal Building. S. E. Schoonover in charge.
- Kansas City, Mo.: 323 U. S. Court House, 811 Grand Avenue. W. H. Hartigan in charge.
- Omaha, Nebr. (substation): Room 315, Federal Office Bldg., 15th and Dodge Sts. T. Bellis in charge.
- Minneapolis, Minn.: Room 209, Federal Office Building, Washington and Third Aves., South. C. W. Harrison in charge.
- New Orleans, La.: Room 225 U. S. Customhouse, 423 Canal Street. E. C. Boudreaux in charge.
- Dallas, Tex. (substation): Room 500, Post Office Bldg. Vaughn Kelly in charge.
- Houston, Tex. (substation): Room 1018, Federal Office Building. M. Harris in charge.
- St. Louis, Mo.: Room 1007 New Federal Bldg., 1114 Market Street. M. R. Stephens in charge.
- Memphis, Tenn. (substation): Room 326, U. S. Custom House. H. T. McGehee in charge.

Western District:
- Denver, Col.: Room 531, U. S. Custom House. W. Vincent in charge.
- Salt Lake City, Utah (substation): Room 430, Post Office Building. J. R. Winch in charge.
- Los Angeles, Calif.: U. S. Appraiser's Building, 1236 Palmetto Street. A. J. Brown in charge.
- San Francisco, Calif.: Room 512, Federal Office Bldg., Fulton and Leavenworth Sts. (Western Dist. Hdqrs. and San Francisco Sta.). J. L. Harvey, Chief of Dist. in charge.
- Seattle, Wash.: Room 501, Federal Off. Bldg. R. S. Roe in charge.
- Portland, Wash. (substation): Room 402, U. S. Custom House. R. C. White in charge.
- Spokane, Wash. (substation): Room 417, Federal Building. R. L. Nelson in charge.

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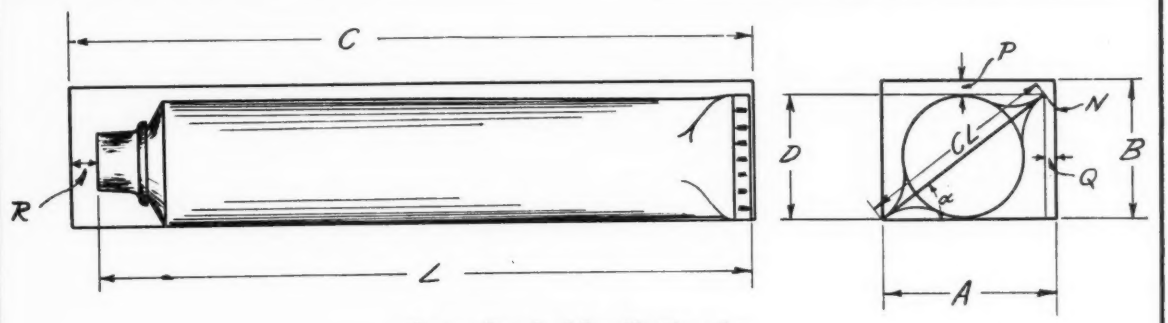


Carton Standard Specifications for
Tubes larger than $^5/_8$" diameter inserted at an angle

D = diameter of tube
CL = width of clip = $^1/_2\pi$D
Q = tolerance in width of carton = $^3/_{32}$"
P = tolerance in height of carton = $^4/_{32}$"
N = approx. position to which clip will fall after tube is inserted in carton
α = angle made by clip with bottom of carton
L = length of tube
C = length of carton = L + R
R = tolerance in length of carton = $^7/_{32}$"

Because there is a fixed relation between the angle α and the vertical height of the clip above the bottom of the carton, *any* tube of *any* diameter inserted at angle α (approx. $37^1/_2°$) will have a vertical height of the clip equal to the diameter of the tube. Therefore, the standard depth of cartons for tubes inserted at angle α will be

$$B = \text{depth of carton} = D + P = D + {}^4/_{32}"$$

Similarly, the relation between the horizontal projection of the clip on the base of the carton and the angle is fixed. The standard width of cartons with tube inserted at angle is determined as follows:

$$A = \text{width of carton} = .7934CL + Q$$

Inasmuch as the length of the clip CL can be expressed in terms of the diameter D then

$$A = .7934.\,{}^1/_2\pi D + {}^3/_{32}"$$

ments must appear on the label while prohibitions apply to labeling.

The food labeling provisions of the Act fall into 12 rules—two in the form of prohibitions and ten in the form of affirmative requirements:

1. The labeling of a food must not be false or misleading in any particular.

2. A food must not be offered for sale under the name of another food.

3. The label of a food which is an imitation of another food must bear, in type of uniform size and prominence, the word "imitation" and, immediately thereafter, the name of the food imitated.

4. A food in package form must bear a label containing the name and place of business of the manufacturer, packer or distributor.

5. A food in package form must bear a label containing an accurate statement of the quantity of the contents in terms of weight, measure or numerical count. Reasonable variations shall be permitted and exemptions as to small packages shall be established by regulations.

6. If a food purports to be or is represented as a food for which a definition and a standard of identity have been prescribed by regulations, its label must bear the name of the food specified in the definition and standard and, insofar as may be required by such regulations, the common names of optional ingredients (other than spices, flavoring and coloring) present in such food.

7. If a food purports to be or is represented as a food for which a standard of quality has been prescribed by regulations and its quality falls below such standard, its label must bear, in such manner and form as the regulations specify, a statement that it falls below standard.

8. If a food purports to be or is represented as a food for which a standard or standards of fill of container have been prescribed by regulations and it falls below the standard of fill of container applicable thereto, its label must bear, in such manner and form as the regulations specify, a statement that it falls below standard.

9. A food which does not purport to be one for which a definition and a standard of identity have been prescribed by regulations must bear on its label the common or usual name of the food, if any there be and, in case it is fabricated from two or more ingredients, the common or usual name of each such ingredient. Spices, flavorings and colorings, other than those sold as such, may be designated without naming each. Exemptions may be established by regulations to the extent that naming of the ingredients is impracticable.

10. If a food purports to be or is represented for special dietary uses, its label must bear such information concerning its vitamin, mineral and other dietary properties as the Secretary determines to be, and by regulations prescribes as, necessary in order fully to inform purchasers as to its value for such uses.

11. If a food bears or contains any artificial flavoring, artificial coloring or chemical preservative, it must bear labeling stating that fact. To the extent that compliance with this requirement is impracticable, exemptions shall be established by regulations. The requirement with respect to artificial coloring does not apply in the case of butter, cheese or ice cream.

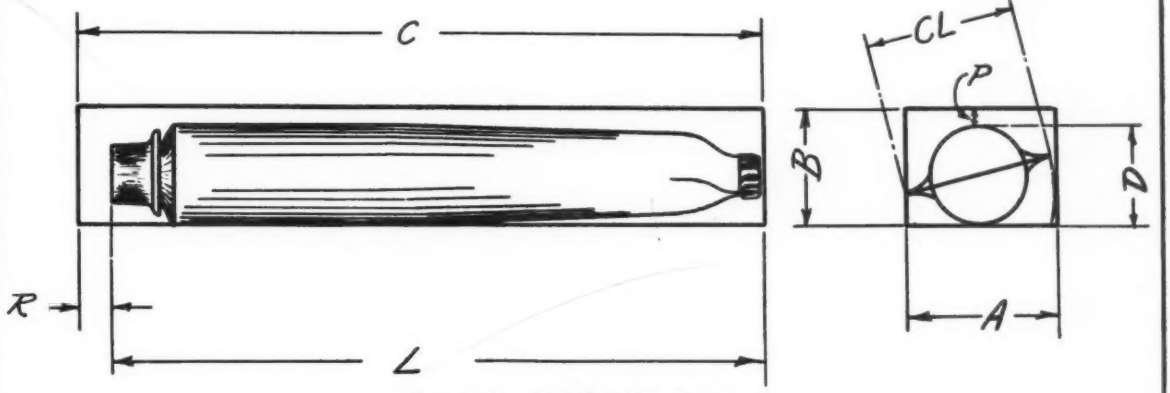
12. Any word, statement or other information required by the Act to appear on the label or labeling must be prominently placed thereon with such conspicuousness (as compared with other words, statements,

designs or devices in the labeling) and in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use.

Drug Labeling Provisions

The provisions relating to labeling of drugs and devices fall within 14 rules, four constituting prohibitions and ten constituting affirmative requirements:

1. The labeling of a drug or device must not be false or misleading in any particular.
2. A drug must not be an imitation of another drug.
3. A drug must not be offered for sale under the name of another drug.
4. A drug or device must not be dangerous to health when used in the dosage or with the frequency or duration prescribed, recommended or suggested in the labeling thereof.
5. A drug or device in package form must bear a label containing the name and place of business of the manufacturer, packer or distributor.
6. A drug or device in package form must bear a label containing an accurate statement of the quantity of the contents in terms of weight, measure or numerical count. Reasonable variations shall be permitted and exemptions as to small packages shall be established by regulations.
7. A drug which is for use by man and contains any quantity of the narcotic or hypnotic substances named must bear on its label the name, quantity and percentage of such substance or derivative and in juxtaposition therewith the statement "Warning—May be habit forming." The named substances are alpha eucaine, barbituric acid, beta-eucaine, bromal, cannabis, carbromal, chloral, coca, cocaine, codeine, heroin, marihuana, morphine, opium, paraldehyde, peyote, sulphonmethane and any chemical derivative of any such substance which derivative has been designated by regulations as habit forming.
8. The label of a drug which is not designated solely by a name recognized in an official compendium must bear the common or usual name of the drug, if such there be, and in case it is fabricated from two or more ingredients, the common or usual name of each active ingredient, including the quantity, kind and proportion of any alcohol and also including whether active or not, the name and quantity or proportion of any bromides, ether, chloroform, acetanilid, acetphenetidin, amidopyrine, antipyrine, atropine, hyoscine, hyoscyamine, arsenic, digitalis, digitalis glucoside, mercury, ouabain, strophanthin, strychnine, thyroid or any derivative or preparation of any such substances contained therein. To the extent that compliance with requirements is impracticable, exemptions shall be established by regulations.
9. The labeling of a drug or device must bear adequate directions for use, provided that where the requirement as applied to any drug or device is not necessary for the protection of the public health, the Secretary shall promulgate regulations exempting such drug or device from such requirement.
10. The labeling of a drug or device must bear such adequate warnings against use in those pathological conditions or by children where its use may be dangerous to health or against unsafe dosage or methods or duration of administration or application, in such manner and form, as are necessary for the protection of users.
11. If a drug purports to be a drug the name of which is recognized in an official compendium, it must be labeled as prescribed therein, provided that the method of packing may be modified with the consent of the Secretary. Whenever a drug is recognized in both the U. S. Pharmacopoeia and the Homoeopathic Pharmacopoeia of the United States, it is subject to the requirements of the U. S. Pharmacopoeia with respect to labeling unless it is labeled and offered for sale as a homoeopathic drug, in



Carton Standard Specifications for Tubes Smaller Than 5/8" Diameter

C = carton length
L = average length of tube
D = diameter of tube
CL = width of clip

Width of carton = CL
Height " " = D + P
Length " " = L + R

P = tolerance in height of carton = 7/32"
A = width of carton = CL
B = height of carton = D + P
R = tolerance in length = 7/32"

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which case it is subject to the provisions of the Homoeopathic Pharmacopoeia of the United States and not to those of the U. S. Pharmacopoeia.

12. The label of a drug which has been found by the Secretary to be liable to deterioration must bear a statement of such precautions as regulations require as necessary for the protection of the public health.

13. A drug which purports to be or is represented as a drug the name of which is recognized in an official compendium, if its strength differs from, or its quality or purity falls below, the standard set forth in such compendium, must plainly state on its label its difference in strength, quality or purity from such standard.

14. Any word, statement or other information required to appear on the label or labeling must be prominently placed thereon with such conspicuousness (as compared with other words, statements, designs or devices in the labeling) and in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use.

Cosmetic Labeling Provisions

Cosmetic labeling provisions fall within five rules, including one prohibition and four affirmative requirements:

1. The labeling of a cosmetic must not be false or misleading in any particular.

2. The label of a coal-tar hair dye must bear the following legend conspicuously displayed thereon: "Caution—this product contains ingredients which may cause skin irritation on certain individuals and a preliminary test according to accompanying directions should first be made. This product must not be used for dyeing the eyelashes and eyebrows; to do so may cause blindness." The labeling of such hair dye must bear adequate directions for such preliminary testing.

3. A cosmetic in package form must bear a label containing the name and place of business of the manufacturer, packer or distributor.

4. A cosmetic in package form must bear a label containing an accurate statement of the quantity of the contents in terms of weight, measure or numerical count. Reasonable variations shall be permitted and exemptions as to small packages shall be established by regulations.

5. Any word, statement or other information required to appear on the label or labeling must be prominently placed thereon with such conspicuousness (as compared with other words, statements, designs or devices in the labeling) and in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use.

An exemption is provided for cosmetics which are to be processed, labeled or repacked in substantial quantities at establishments other than those where ordinarily processed or packed from certain labeling requirements of the Act, provided that such cosmetics are not adulterated or misbranded upon removal from such processing, labeling or repacking establishments. A similar exemption applies to drugs and foods. Small open containers of fresh fruits and fresh vegetables are also exempted by regulations from certain labeling requirements.

Adulteration

Numerous provisions in the law apply to the adulteration of foods, drugs and cosmetics. In most cases these provisions do not affect the packaging operations or the packages themselves, except insofar as the penalty for adulteration involves a confiscation and seizure of packaged products. However, the provisions of the law applying to preparation or holding of foods, drugs or cosmetics under insanitary conditions obviously apply to packaging as well as to processing conditions.

Enforcement

The Food and Drug Administration is armed with a number of powers to secure the enforcement of provisions and prohibitions contained in the Act. Violation of the prohibited acts, such as the introduction into interstate commerce of adulterated or misbranded foods, drugs or cosmetics is made a misdemeanor under the law. The penalty for such violation is imprisonment for not more than one year or a fine of not more than $1000 or both. Second offenders are liable to imprisonment for not more than three years or a fine of not more than $10,000. Where intent to defraud or mislead is found, a penalty of three years imprisonment or $10,000 fine or both may be imposed. These criminal provisions, while constituting a big stick behind the door, are perhaps the least utilized of the enforcement procedures provided by the Act. The Administration is empowered to proceed against merchandise as well as against persons. Articles that are adulterated or misbranded and introduced into interstate commerce are liable to seizure by the Administration and, if found by the courts to be adulterated or misbranded, may be disposed of by destruction or sale.

Such drastic proceedings are not, however, undertaken in most cases. The law provides that nothing in the Act shall be construed as requiring the Administration to report for prosecution or to institute libel or injunction proceedings where minor violations of the Act are concerned, provided the Administration believes that the public interest will be adequately served by a suitable written notice or warning.

Far more important to the average manufacturer than the criminal provisions or the seizure and trial provisions of the Act is the fact that failure to conform to the packaging and labeling provisions and consequent action by the Administration may involve the manufacturer in a whole series of extremely expensive package changes and may involve the loss of dealer good will, adverse publicity and a dislocation of production and shipments.

Because of these economic consequences—quite as much as because of the punitive provisions of the law—manufacturers in general make every effort to insure, in advance, that they achieve a satisfactory degree of compliance with every provision of the Act. To date, the Administration has proceeded only in the more flagrant cases of violation. This applies particularly to the newer provisions for which the groundwork had not been laid by the earlier Food and Drug Act.

Regulations Affecting Special Trades

Packagers in certain special industries and packagers shipping through certain channels are required to conform with the rules and regulations of government administrative bodies and semi-official organizations representing such groups as the railroads or the motor freight carriers. The more important of these regulations are here discussed. More detailed data can, of course, be obtained from the particular bureaus or organizations concerned with each individual case.

Liquor Package Regulations

The Alcohol Tax Unit of the Bureau of Internal Revenue of the Treasury Department of the United States is charged with the administration of the laws and regulations concerning distilled spirits, alcoholic wines, fermented liquors, cereal beverages, denatured alcohol and other such products. Under these laws, the Bureau regulates the size, printing, marking, use and re-use of containers designed or intended for use for the sale and resale of distilled spirits. The regulations governing these operations are many and varied. Five pamphlets are available from the Superintendent of Documents, Washington, D. C., detailing the regulations as follows:

Regulations No. 5. Labeling and Advertising of Distilled Spirits

Regulations No. 6. Bottling of Distilled Spirits in Bond

Regulations No. 11. Bottling of Tax-Paid Distilled Spirits

Regulations No. 13. Traffic in Containers of Distilled Spirits

Regulations No. 15. Rectification of Spirits and Wines

These regulations cover a very wide series of points relating to the manufacture of liquor bottles, the storage of liquor bottles, the identification of liquor bottles, their labeling, their size, the places in which they are to be filled, their importation, application of tax stamps, etc.

Label Requirements

Mandatory label information requirements are as follows:

(a) On the brand label:
  (1) Brand name.
  (2) Class and type.
  (3) Name and address.

(b) On the brand label or on a separate label (back or front):
  (4) In the case of imported distilled spirits, name and address of importer.
  (5) In the case of distilled spirits bottled for the holder of a permit, or a retailer, name and address of distiller, blender or bottler.

(c) On a separate label (for the purpose of these regulations to be known as the Government label), in such manner and form as shall be prescribed by the Administrator:
  (6) Alcoholic content.
  (7) Net contents.
  (8) Artificial or excessive coloring or flavoring.
  (9) Percentage of neutral spirits and name of commodity from which distilled, or in case of continuously distilled neutral spirits or gin, the name of the commodity only.
  (10) Age of whiskey and straight whiskey, respective percentages of whiskey, straight whiskey and neutral spirits and type of cooperage.
  (11) State of distillation of domestic types of whiskey and straight whiskey, except blends.

The mandatory information required by any of the subdivisions of subsection (c) to be stated on a separate label may, if desired, reappear or be restated on the brand label, in which event there shall also reappear or be restated or information required to be stated in conjunction therewith by such separate subdivision and the section to which such subdivision refers. If it is desired, all mandatory information required by subsection (c) may appear on the brand label in lieu of a separate label.

Detailed instructions are provided for compliance with each of the requirements cited above.

Another section of the labeling regulations provides the following general requirements:

(a) Contrasting background. All labels shall be so designed that all the statements thereon required by this article are legible under ordinary conditions and all such statements shall be on a contrasting background.

(b) Size of type. All statements required on labels by this article shall be in readily legible script, type or printing not smaller than 8-point Gothic caps, except that if contained among other descriptive or explanatory reading matter, the script, type or printing of all required material shall be of a size substantially more conspicuous than such other descriptive or explanatory reading matter: *Provided*, That in the case of labels on bottles having a capacity of less than $1/2$ pt., such script, type or printing thereon need not be in 8-point Gothic caps, but shall be readily legible under ordinary conditions.

Cross References: Glass Bottles and Jars, page 256; Filling Liquids and Pastes, page 395; Capping and Sealing Equipment, page 402; Labeling Machines and Devices, page 420; Shipping Methods and Considerations, page 512; Protective Paddings and Cushions, page 540.

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(c) English language. All the requirements of this article shall be stated on all labels in the English language: *Provided*, That the brand name, the place of production and the name of the producer appearing on labels need not be in the English language if the words "product of" immediately precede the name of the country in which the distilled spirits were produced in accordance with customs requirements. Additional statements in foreign languages may be made on labels if no such statements conflict with, or are contradictory to, the requirements of this article.

(d) Location of label. No label, other than stamps authorized or required by the United States Government or any other government, shall be affixed over the mouths of bottles of distilled spirits and no label shall obscure any government stamp or be obscured thereby or obscure any markings or information required to be blown in the bottle by regulations of the Secretary of the Treasury.

(e) Labels firmly affixed. All labels shall be affixed to bottles of distilled spirits in such manner that they cannot be removed without thorough application of water or other solvents.

(f) Additional information on labels. Labels (other than the label to be known for the purposes of these regulations as the Government label) may contain information other than the mandatory label information required by this article, provided such information complies with the requirements of this article and does not conflict with, nor in any manner qualify, statements required by any regulations promulgated under the Act.

(g) Representations as to materials. If any representation (other than representations or information required by this article) is made as to the presence, excellence or other characteristic of any ingredient in any distilled spirits, or used in the production thereof, the label containing such representation shall state in print, type or script substantially as conspicuous as such representation, the name and amount in per cent by volume of each such ingredient, except that percentages of whiskey, where stated, shall be as provided elsewhere: *Provided*, That no statement shall appear on any label with reference to the use of selected or choice grain, fruit, herbs or other materials in the distilled spirits or in the production thereof, unless such materials are of a higher grade than that customarily used in the industry and then only if the Administrator has previously found, on the basis of evidence submitted to him, that such materials are of such higher grade. If only a portion of the materials used is of such higher grade, then the percentage thereof that is of such higher grade shall be stated in direct conjunction with such statement, in print, type or script, substantially as conspicuous as that used in connection with such statement.

(h) Upon request of the Administrator, there shall be submitted to him a full and accurate statement of the contents of the bottles to which labels are to be or have been affixed.

Further regulations prohibit the simulation of government stamps and the use of certain terms such as "double distilled" or "triple distilled" and the use of written or graphic matter on individual coverings, cartons or other containers of a type prohibited from appearing on the label or bottle. Certificates of approval of labels of domestically bottled distilled spirits must be secured from the Administrator by the bottler.

Bottle Plant Supervision

The federal law provides strict and detailed restrictions as to the location, construction, equipment and operation of liquor bottling plants. These vary according to the type of product and type of plant. Detailed information is available from the Alcohol Tax Unit, Bureau of Internal Revenue, Treasury Dept.

Tax Stamps

The law requires the application of strip stamps over the mouth of each bottle of distilled spirits or compounds containing distilled spirits and on certain types of wines.

Manner of affixing stamps: The stamps must be securely affixed to the bottles with the use of a good adhesive. The adhesive used must be in proper liquid condition and care must be taken to cover the entire back of the stamp with the adhesive and to press the whole surface of the stamp firmly against the surface of the bottle sufficiently long to cause the entire surface of the stamp to adhere securely to the bottle. The stamp must pass over the mouth of the bottle, extending an approximately equal distance on two sides of the bottle and be so affixed that a portion of the stamp will remain attached to the bottle when it is opened.

Concealing or obscuring stamps prohibited. No part of the stamp shall be concealed or obscured by any label or other covering, except that a cup may be placed over the opening of the bottle or the bottle may be placed in a carton. Seals made of cellulose or other material which are shrunk or otherwise fitted over the necks of the bottles and cover the stamps must be sufficiently transparent to permit the stamps to be plainly seen and the data thereon easily read. No cup or cap may be placed over the opening of a bottle and cover the stamp unless such cup or cap is transparent or is so placed on the bottle that it may be readily removed at any time without injury to the stamp and the arrangement is such that the ends of the stamp will be plainly visible when the cap or cup is in place. Cartons or other coverings of bottles of distilled spirits are permitted if so made that they may be opened and closed without being torn or broken. Sealed cartons or other coverings may not be used unless transparent or unless openings therein permit the data on the stamp and the indicia on the bottle to be plainly read.

Affixing stamp over cup or cap. The stamp may be affixed over a cup or cap placed over the opening of the bottle, provided the arrangement is such that the stamp will be torn apart or destroyed when the cup or cap is unscrewed or removed or destroyed. Where it is desired to affix the stamp over a removable cup or cap, the cup or cap must be securely screwed or fastened over the opening of the bottle and must be of such size and construc-

tion that the stamp will pass over the top and extend beyond the cup or cap for such length that each end of the stamp may be securely affixed to the surface of the bottle.

Other regulations concern the manner of affixing stamps and markings to cases and barrels.

Seven standard bottle sizes are prescribed for bottles of distilled spirits. These are, respectively: 1 gal., 1/2 gal., 1 qt., 4/5 qt., 1 pt., 1/2 pt. with a 4/5 pt. allowable for Scotch and Irish whiskies, Scotch and Irish type whiskies and for brandy and rum. Bottles utilized must contain the quantities named with a head space not in excess of 8 per cent of the total capacity of the bottle after closure.

Federal Trade Commission

Under the Wheeler-Lea Act, an amendment of the Federal Trade Commission Act passed in March of 1938, the Commission was given more effective powers of control over false advertising of foods, drugs, devices and cosmetics. Thus two bodies control the claims that may be made for any product in these three fields. The Wheeler-Lea Act forbids the use of a false company name, such as the use of the words manufacturer, laboratories, institute, college, guild, etc., when these words do not properly describe the company. It forbids a false description of the product, such as general statements regarding endorsements by large numbers of doctors, physicians, scientists, women's clubs, etc. It makes it illegal to state that the government approves a product or that any branch of the government or that a state or the Army or Navy has approved of the product. The use of contests is circumscribed and lotteries and similar practices are forbidden. The use of false and fictitious prices in advertising or on the package is forbidden and it is illegal to state that a special offer, limited offer or special price is being offered when such is not the case. Since self-medication is impossible or dangerous in the case of a large number of diseases, products for the treatments of these conditions cannot be advertised to the public.

Additional Federal Food Statutes

A number of statutes, relating to foods, viruses, serums, toxins, insecticides, etc., have been on the books for a number of years. In most cases, the name of the act describes the special group of products falling under its provisions. These acts include: the Butter Act, the Seafood Inspection Act, the Wrapped Meats Act, the Meat Inspection Act, Virus, Serum and Toxin Acts, the Filled Cheese Act, the Filled Meat Act, the Import Milk Act, the Tea Importation Act, the Insecticide Act, the Federal Caustic Poison Act, the Imported Meat Act, the Horse Meat Act.

In most cases, these Acts fall under the jurisdiction of the Food and Drug Administration of the Federal Security Agency. The Insecticide Act, however, is still administered by the Department of Agriculture.

Postal Department Regulations

Shipping regulations other than parcel post are discussed, in some detail, in the article on shipping methods and considerations, page 512 et seq.

The Post Office Department has set up regulations as to the preparation, wrapping and packing of parcel-post or fourth-class mail matter. These regulations are contained in Circular 3 of the Division of Classification, dated October, 1937 and available through any postmaster.

Examination: Fourth-class matter must be so wrapped that the contents may be examined easily by postal officials. When not so wrapped, or when it contains writing not authorized by law, the matter is subject to first-class postage.

Nailed boxes: Parcel-post mail may be enclosed in boxes to which the lids are nailed or screwed, provided the lids can be readily removed with a chisel or screw driver for examination of contents.

Containers and packing: All matter must be securely packed and wrapped or packed in a strong container so as to bear transmission without breaking or injuring the mail bags, their contents or the persons handling them. Many articles are damaged in the mails because they are not properly packed to withstand the necessary handling.

Containers previously used for shipping high explosives having a liquid ingredient (such as dynamite) must not be used for shipments of any article by parcel post. Containers which have been used for the shipment of other high explosives must have all marks removed before being used for shipment of articles by parcel post.

Harmful articles not absolutely excluded from the mails, but which, from their form or nature, might, unless properly secured, destroy, deface or otherwise damage the contents of the mail bag or harm the person of anyone engaged in the postal service, may be transmitted in the mails only when packed in accordance with the postal regulations.

Pyroxylin plastics (celluloid, fiberloid, pyralin, viscoloid, zylonite, etc.), in sheets, rods or tubes must be packed in strong spark-proof wooden boxes and to each parcel must be attached the diamond-shaped yellow caution label described in section 588, Postal Laws and Regulations.

As an exception to the above, pyroxylin sheets in packages not exceeding one-half inch in thickness may be packed in containers made of two thicknesses of strong double-faced corrugated fiberboard and small quantities may be shipped in strong strawboard tubes lined with single-faced corrugated pasteboard.

Liquids: Admissible liquids and oils in packages not exceeding the limit of weight of fourth-class matter will be accepted for mailing when intended for delivery at the office of mailing or on a rural route starting therefrom when enclosed in securely closed containers, provided it is not necessary to transport them over steam or electric railways.

Admissible liquids and oils, pastes, salves or other articles easily liquefiable shall be accepted for mailing, re-

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gardless of distance, when they conform to the conditions prescribed by section 590, Postal Laws and Regulations, which may be consulted at any post office.

Mailable liquids in tightly closed metal containers in quantities of 1 gal. or more shall be accepted for mailing when suitably boxed or crated to be dispatched outside of mail bags and labeled "Fragile—liquid. This side up," but when in extra strong metal containers, such as heavy milk cans, the boxing or crating may be omitted.

Fragile articles: Articles easily broken must be securely packed in wooden or strong double-faced corrugated fibreboard boxes with ample cushioning material of excelsior, crushed paper or the like, completely surrounding each article to prevent damage. All such parcels must be labeled "Fragile."

Perishable articles must be marked "Perishable" and it is advisable that they be sent as special-delivery matter by affixing stamps for the special-delivery fee in addition to the regular postage, thus expediting their delivery. Articles likely to spoil within the time reasonably required for transportation and delivery will not be accepted by post office authorities for mailing.

Unmailable matter: All matter is unmailable which is of a harmful nature, such as poisons, explosives and corrosive articles, etc.

Requests for further information should be addressed as follows:

Third Assistant Postmaster General, Division of Classification, relative to the classification and admissibility of matter as parcel-post mail, rates of postage, limit of weight and size, manner of addressing and wrapping so as to permit examination, permissible enclosures and additions, attaching communications to parcels, etc., and for additional copies of Circular 3.

Third Assistant Postmaster General, Division of Registered Mails, relative to the insurance, "C.O.D." (including demurrage charge) and registry features.

Second Assistant Postmaster General, Division of Railway Mail Service, relative to the admissibility to the mails and wrapping of matter which from its form or character would be liable to injure the mails or the person of postal employees.

State and Local Laws

State legislatures, through their inherent police power as well as through their constitutional powers involving the protection of public health and the like, have undoubted rights to pass legislation protecting the public against adulterated and misbranded foods, drugs and cosmetics. Court decisions, involving the effect of federal legislation upon state legislation, have followed the line of thought that the validity of state laws is in no way affected by federal laws, except where the former are conflicting.

Thus, as far back as 1909, adulterated and misbranded liquors, in the process of interstate transportation, were seized under the Maine liquor law. The claimant contended that, as they were seized while in interstate transit, they were protected from forfeiture and seizure under the state law. The court decided otherwise. It decided that since the liquor had been brought into the state in a condition violating an act of Congress, it became subject to the laws of the state the moment it came within its limits.

In a 1913 decision (McDermott vs. Wisconsin), the Supreme Court made the following statement: "While these regulations (of the Food and Drug Act of 1906 as to adulteration and misbranding) are within the power of Congress, it by no means follows that the state is not permitted to make regulations, with a view to the protection of its people against fraud or imposition by impure food or drugs."

The nature of state statutes differs considerably in the various states. Some 15 states have passed food, drug and cosmetic acts or acts covering one or two of these categories based upon the Federal Food, Drug and Cosmetic Act of 1938 (i.e., the current law). These include Arkansas, California (separate drugs act and separate food act), Connecticut, Florida, Indiana, Louisiana, Nevada, New Jersey, New York (separate drug and cosmetic act and food act), North Carolina, North Dakota (separate cosmetic act and food and drugs act), Oklahoma, Virginia (separate drug and cosmetic act and food act), West Virginia and Wyoming.

These laws apply to foods, drugs or cosmetics *sold* within the state whether or not (in most instances) the product is manufactured within that state. Thus manufacturers are obliged, in planning new packages, to consider the effect upon package design, label and structure not only of the federal statute, but of the laws of the state or states in which the product is intended to be sold. Wherever any given state presents a sizable present or potential sales outlet, the manufacturer will be well advised to check the state law and to attempt to make his package conform with state law requirements which may be more stringent or more restrictive than the federal law. State requirements cannot relax federal restrictions, since these of course prevail throughout the United States.

In general, state laws and local ordinances are designed principally to cover-in products manufactured within the state and sold only within the state (i.e., products outside the reach of the federal authorities).

Cross References: The Food, Drug and Cosmetic Act, page 20; Regulations Affecting Special Trades, page 25; Trade Mark and Copyright Protection, page 30. For details as to state regulations, consult officials listed for each state on page 29.

OFFICIALS ADMINISTERING STATE REGULATORY LEGISLATION

Alabama.—Supervisor, Division of Agricultural Chemistry, Department of Agriculture and Industries, Montgomery.

Arizona.—Director, State Laboratory, Tucson. State Dairy Commissioner, Phoenix.

Arkansas.—State Health Commissioner, Little Rock. Secretary, State Board of Pharmacy, Little Rock.

California.—Chief, Bureau of Food & Drug Inspection, State Department of Public Health, San Francisco. Chief, Dairy Control, Department of Agriculture, Sacramento.

Colorado.—Secretary, State Board of Health, Denver. State Dairy Commissioner, Denver.

Connecticut.—State Dairy and Food Commissioner, Hartford. State Chemist, Agricultural Experimental Station, New Haven.

Delaware.—State Health Officer, Dover. Chemist, State Board of Agriculture, Dover.

District of Columbia.—Health Officer, Washington, D. C.

Florida.—Commissioner of Agriculture, Tallahassee. State Chemist, Tallahassee.

Georgia.—Commissioner of Agriculture, Atlanta. State Chemist, Atlanta.

Hawaii.—Food Commissioner and Chemist, Honolulu.

Idaho.—Commissioner of Public Health, Boise. State Chemist, Boise.

Illinois.—Superintendent, Division of Foods & Dairies, Department of Agriculture, 228 South Wabash Ave., Chicago.

Indiana.—Director, Food & Drug Bureau, State Board of Health, Indianapolis. Director, Bureau of Dairy Products, State Board of Health, Indianapolis.

Iowa.—Secretary of Agriculture, Des Moines. Chief Chemist, Department of Agriculture, Des Moines.

Kansas.—Secretary, State Board of Health, Topeka. Assistant Chief Food & Drug Inspector, State Board of Health, Topeka.

Kentucky.—Director, Bureau of Foods, Drugs & Hotels, State Department of Health, Louisville.

Louisiana.—President, State Board of Health, New Orleans. State Analyst, State Board of Health, New Orleans.

Maine.—Chief, Division of Inspection, Department of Agriculture, Augusta.

Maryland.—State Food & Drug Commissioner, Baltimore. Chief, Bureau of Chemistry, Department of Health, Baltimore.

Massachusetts.—Director, Division of Food & Drugs, Department of Public Health, Boston.

Michigan.—Director, Bureau of Foods & Standards, Department of Agriculture, Lansing. Director, Bureau of Dairying, Department of Agriculture, Lansing. State Analyst, Department of Agriculture, Lansing. Director of Drugs & Drug Stores, State Board of Pharmacy, Lansing.

Minnesota.—State Dairy & Food Commissioner, St. Paul. Chief Bacteriologist, Department of Agriculture, St. Paul. Chief Chemist, Department of Agriculture, St. Paul.

Mississippi.—Commissioner of Agriculture and Commerce, Jackson. State Chemist, State College.

Missouri.—State Health Commissioner, Jefferson City. Commissioner of Agriculture, Jefferson City. (Dairy and Ice Cream Laws)

Montana.—Director of Foods & Drugs, Department Public Health, Helena. Chief, Division of Dairying, Department of Agriculture, Labor & Industry, Helena.

Nebraska.—Deputy Secretary of Agriculture, Lincoln. Chief, Bureau of Dairies, Food, Drugs & Oil, Department of Agriculture and Inspection, Lincoln.

Nevada.—State Food & Drug Commissioner, Reno.

New Hampshire.—Chief, Division Chemistry & Sanitation, State Board of Health, Concord.

New Jersey.—Chief, Bureau of Foods & Drugs, Department of Health, Trenton. Chief, Bureau of Chemistry, Health Dept., Trenton.

New Mexico.—Director of Public Health, Santa Fe. State Dairy Commissioner, State College.

New York.—Director, Bureau Food Control, Department of Agriculture & Markets, Albany. Director, State Laboratory, Albany. Secretary, State Board of Pharmacy, State Education Bldg., Albany.

North Carolina.—Commissioner of Agriculture, Raleigh. State Food & Oil Chemist, Department of Agriculture, Raleigh.

North Dakota.—State Food Commissioner & Chemist, Bismarck. State Dairy Commissioner, Bismarck.

Ohio.—Director, Department of Agriculture, Columbus. Chief, Dairy & Food Division, Department of Agriculture, Columbus.

Oklahoma.—Assistant Commissioner of Health, Oklahoma City. State Dairy Commissioner, Oklahoma City.

Oregon.—Director, Department of Agriculture, Salem. Chief Chemist, Department of Agriculture, Salem.

Pennsylvania.—Director, Bureau Foods & Chemistry, Department of Agriculture, Harrisburg. Director, Bureau of Professional Licensing, Department of Public Instruction (Drugs), Harrisburg.

Rhode Island.—Chief Inspector, Division of Foods and Drugs, State Department of Public Health, Providence.

South Carolina.—Commissioner of Agriculture, Columbia.

South Dakota.—Secretary, Dept. of Agriculture, Pierre. State Chemist, Vermillion.

Tennessee.—Commissioner of Agriculture, Nashville. Superintendent, Division of Foods, Fertilizers, Dairies, Department of Agriculture, Nashville.

Texas.—Director, Food & Drug Bureau, State Board of Health, Austin.

Utah.—Commissioner of Agriculture, Salt Lake City.

Vermont.—Secretary of Health, Burlington. Chemist, Board of Health, Burlington.

Virginia.—Director, Dairy & Food Division, Department of Agriculture & Immigration, Richmond. Chief Chemist, Department of Agriculture & Immigration, Richmond.

Washington.—Supervisor, Division Foods, Feeds, Drugs, Dept. of Agriculture, Olympia. State Chemist, University of Washington, Seattle.

West Virginia.—Commissioner of Health (foods and drugs), Charleston. Commissioner of Agriculture (foods), Charleston.

Wisconsin.—Acting Director of Agriculture & Markets, Madison. Chief Dairy Division, Department of Agriculture, Madison.

Wyoming.—Acting Commissioner, Department of Agriculture, Cheyenne. State Chemist, Laramie.

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Trade Mark and Copyright Protection

Through the use of patents, trade marks or copyrights, a manufacturer introducing a new package may avail himself of a degree of protection against competitive attempts to secure the benefit of the new development or to confuse the consumer.

It is essential, in considering all of these forms of protection, to remember that they are passive rather than active. They establish rights in the eyes of the law, but they do not involve active policing of these rights by the government.

Package constructions, involving actual inventions enhancing the utility or usefulness of the package, are patentable under the same terms as are all other new and useful inventions. Such patents are issued by the United States Patent Office for terms of 17 years with renewal provisions. It is advisable, whenever the question of patenting a packaging development is to be considered, to consult an experienced patent attorney.

If the design of the package or container is new and ornamental, a design patent may also be secured. Design patents are for terms of three-and-one-half, seven or fourteen years, depending upon the term applied for and the fee paid to the Patent Office.

Trade Marks

A trade mark protects the name or symbol under which an article of merchandise is sold. The United States Patent Office provides facilities for registration of trade marks—that is, names or symbols or a combination of both—used by any manufacturer to identify a particular product. This protection applies only to articles used in interstate or foreign commerce. The mark must be one which is still available for use, i.e., the same or a closely resembling mark must not previously have been adopted and registered by any person or firm as applied to the same class of goods. This question can be solved by having a search conducted through the registered and published marks in the Trade Mark Division of the United States Patent Office.

A mark already registered may often be purchased for a nominal sum, even if still in use. If not in use, it is possible to prove abandonment and thereby remove the bar to registration. Abandonment, however, is largely a matter of intent and sometimes difficult to prove.

There are many cases of trade marks in use by manufacturers who have secured neither Federal nor State registration of the mark. In this event, the manufacturer who seeks to register his mark can only ascertain whether or not such an unregistered mark is in use, by his own observations in the particular field or by consulting with experts in that field.

In this connection, it should also be borne in mind that even if the Patent Office considers the mark registrable and passes it to publication, any persons, firms, etc., who may deem themselves injured by the granting of the registration, may file an opposition, whereupon evidence may be presented and a decision rendered by the proper tribunals of the Patent Office.

Even after a registration has been passed to issue by the Patent Office, and the registration has been issued, a petition for cancellation may be filed by any persons, firms, etc., who may deem themselves injured by the registration and procedure similar to that in filing oppositions is then to be followed.

Many manufacturers and laymen believe that once they secure a Federal Trade Mark Registration, their rights are fully protected and nothing further need be done. However, the government, of its own initiative, will take no steps to halt an infringer of a patent or trade mark. It is incumbent upon the owner of the infringed patent or trade mark to bring suit in Federal Court. When all the facts are presented at the trial and the patent or trade mark is found to be infringed, the Court will then issue a restraining order and probably arrange an accounting for damages and loss of profits.

Copyright

Labels, carton designs, displays and other package paraphernalia falling under the classification of prints and labels may be copyrighted provided they are artistic creations used in the sale of goods. Such copyrights are for a period of 28 years and may be renewed for 28 years. Each must name, or picture, or be descriptive of, some particular article, or class of articles and, prior to filing application for copyright, must be originally published with notice of copyright. A label or print is considered published when it has been printed ready for use.

A label must be something attached to the goods, as by pasting onto the container. Cartons, cans, wrappers, etc., are classed in this category and may be registered in their entirety when submitted in flat form. A print cannot be attached to the goods, but must be used to advertise them; advertisements in magazines, street car cards, displays, etc., make up this group. Copyright gives the owner the right to sue directly in Federal courts to obtain damages fixed by law.

There are instances, also, in which prints, pictorial illustrations, pamphlets, etc., may be copyrighted in the Copyright Division of the Library of Congress. But this type of copyright, though more economical, must not be confused with the Patent Office copyright.

To secure copyright register, the user first applies a copyright notice to the object to be covered by copyright. Application is then made to the Patent Office.

PAPER CONTAINERS

Section Three

Pages 31 to 102

BOXBOARDS: TYPES AND SELECTION

FOLDING AND DISPLAY CARTONS

SPECIALLY PROCESSED CARTONS

STAYED AND STAPLED CARTONS

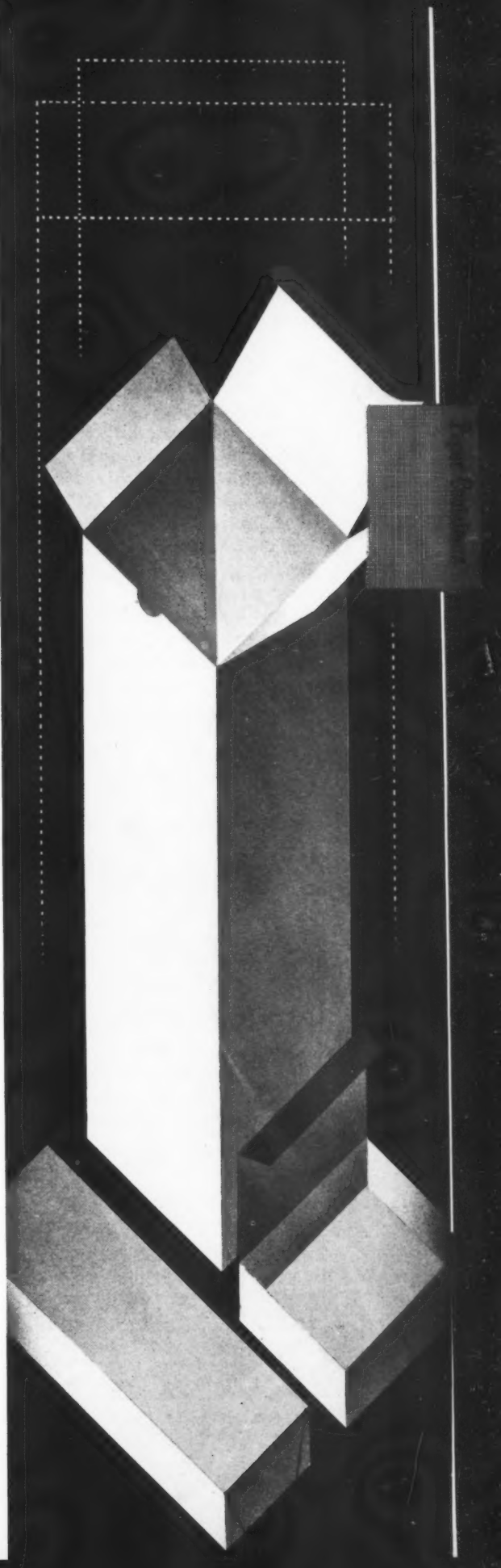
SET-UP PAPER COVERED BOXES

TRANSPARENT COMBINATION BOXES

PAPER CONTAINERS FOR LIQUIDS

PERMANENT AND RE-USE BOXES

FIBRE-BODIED CONTAINERS



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Boxboards: Types and Selection

Folding cartons and set-up boxes are made from boxboard manufactured on a multi-cylinder paper machine. The function of this machine is to draw a film or web of fibres from each cylinder (usually 5 to 8 cylinders) and, by subsequent pressure, to form a compact sheet. Each cylinder turns in a vat supplied with the raw stock (about 1 per cent fibre and 99 per cent water) from which the board is to be made. This supply may consist of fibres reclaimed from waste paper or of virgin pulp fibres or a mixture of these according to the specifications of the board to be produced. The first and last cylinders form the two outside liners or surfaces of the board, while the remaining cylinders produce the filler or inner plies. The thickness of each ranges from .002 of an inch and upward, depending upon the adjustment of the machine.

Since any type of fibre may be furnished to the cylinders, and each cylinder forms a part of the board construction, a wide variety of boxboards can be made.

There are certain grades of board in common use for folding and set-up boxes, made of different materials and different thicknesses, dependent upon the size and style of the box and the use to which it will be put. The thickness or caliper is expressed in thousandths of an inch—termed "points" and ranges from .012 up to .065 of an inch.

Table 1 lists these grades of board, together with the caliper range and in general the materials from which they are made. This table shows in general terms the kind of materials used for the several boxboard grades. However waste papers are sorted into many classes, each commanding a different price according to the fibre content. Papers containing strong white fibres bring the highest price and from there range downward to mixed papers, the lowest class. Pulp is either unbleached or bleached and price levels vary accordingly.

The selection of the materials for the production of a boxboard is made so as to produce at the lowest cost the quality which is specified. It depends upon the price, availability of the supply and the adaptability of the machine to produce the grade selected. The scarcity and the fluctuating prices of certain grades of pulp during the last half of 1940 brought about many substitutions

We wish to acknowledge our indebtedness to Grafton Whiting of the National Paperboard Assn. for invaluable aid in the preparation of the above article and of the accompanying charts.

TABLE 1

GRADES	Caliper Range in Inches	FURNISH									Price Index
		Waste Papers composed principally of					Pulp				
		Mixed Papers	News	Ground Wood	Sulphite Fibres	Old Contain	Sulphite	Kraft	Ground Wood	Clay	
FOLDING											
Chip (bending)	012-051	x	x			x					105
Mist Gray Suit Board	020-040	x	x			x	x	x			120
Manila Lined Chip	012-051	x	x	x		x	x				125
Kraft Board	012-051							x			145
White Patent Coated News	012-028		x	x	x		x		x		160
Clay Coated Board	012-028		x		x		x			x	200
SET-UP											
Chip (non-bending)	016-065	x	x								100
News Vat Lined Chip	016-065	x	x			x					105
Filled News	016-065	x	x								110
Solid News	016-065		x			x					115
Single White Vat Lined Chip	016-065	x		x	x	x	x				135

Note: 1936-1939 = 100. Current prices are not comparable with the index because waste paper and pulp prices are affected due to uncertainty of supply

in the formulae previously used and, except in the lower grades, little uniformity among different mills is found.

The price index (Table 1) under these circumstances, is merely an expression of relationship previously found and even this is an approximation, since costs and selling prices vary in different localities.

Boards

Solid boards: A general term indicating that the board is made of the same material throughout.

Filled boards: A board which contains inner plies of a different stock than the outer or liner plies.

Pasted board: A board made of two or more sheets of board or of board and paper pasted together by a subsequent operation.

Vat lined board: A board made on a cylinder machine where the first or last cylinder vat is supplied with a different quality of stock from the other vats. Double vat lined board requires that both the first and last vats be so used.

Color

Manila: A term used to indicate a color (yellowish) and appearance comparable to that formerly obtained when manila hemp (rope) was used.

Beater colored: The coloring material is added to the paper stock before entering the cylinder vat, thus impregnating the whole ply.

Calender colored (or stained): The coloring material is applied to the surface of the board as it passes through the calender stack, thus coloring the top but not necessarily permeating throughout the ply.

Chemicals

Various chemicals, such as rosin and alum for sizing, are used in making boxboard to provide resistance to moisture penetrations. Starch is used for hardening and stiffening. Loading material, such as clay, is also used. Emulsions, such as asphalt for water-proofing and dyes and pigments for procuring the desired color, are also employed. With these applied to the paper stock, any one or all of the plies may receive a specified treatment to suit individual requirements.

Finish

Dry finish: The finish obtained when board passes through calender stack without special treatment.

Wet finish: The surface of the board is subjected to a water or steam bath in passing through the calender which gives it a smoother finish. This is somewhat similar to dampening cloth before pressing.

Surface treatment: Treatment of the surface of the board may be made at the calender either before passing through the stocks or part way in the operation. For example, silicate is applied to render the board resistant to grease penetration in the packaging of foods. Starch or other sizing is used to give a smoother finish for certain types of printing. Paraffin or wax is applied as a water-proofing agent where the board is to be used for the packaging of liquids or semi-liquids. It is common practice in folding box plants to coat with paraffin or wax for this same purpose.

Standard finishes: The following definitions, as established by the National Paperboard Assn., apply to folding and set-up boxboards:

1. Standard sizes: The standard size of all grades is 25 in. by 40 in., containing 1,000 sq. in. Patent coated or manila boards (lists 6 to 8) are also shown in sizes 24 in. by 36 in., containing 864 sq. in. and 28 in. by 44 in., containing 1,232 sq. in. The standard sizes are used as bases for all computations.
2. Standard package: A standard package of patent coated or solid manila board is a ream of 500 sheets. These grades are sometimes packed, for convenience, in fractions or multiples of a ream, depending upon the size of the sheet.
3. Bundle: A bundle is a unit containing 50 lbs. The quantity of sheets varies with the size and the caliper, but the weight of 50 lbs. of board is fixed.
4. Regular numbers: The number or regular number is the quantity of standard sized sheets (25 by 40) of boxboard required to make a bundle of 50 lbs.
5. Count: The count is the quantity of odd-sized sheets required to make a bundle. For the standard size (25 by 40) the count would be identical with the regular number; therefore it has become the custom to use the term "count" to apply only to odd-sized sheets and "regular number" to standard size. The area in square inches of the board in a bundle of a regular number is the number multiplied by 1,000 (25 by 40). The square inch area of an odd-sized sheet is the width multiplied by the length and by dividing this figure into the area of the corresponding regular number the count for the odd-sized sheet is found.
6. Finish: There are four standard finishes designated by numbers 1 to 4, the lowest to the highest. The degree of finish is regulated by the pressure exerted on the calenders under which the board passes. The pressure determines the density of the sheet. The resulting surface is incidental, but gains in smoothness as calender pressure is increased.

   No. 1—Light pressure, resulting in a rough surface and low density. It gives large sheetage for its weight, i.e., it has most area per pound of board.

   No. 2—Medium pressure with fair surface and sheetage. Popular for ordinary printing and general utility.

   No. 3—Heavy pressure with smooth surface and low sheetage. Used largely where better printing surface is required.

   No. 4—Heaviest pressure with extra smooth and slick surface, dense body and firmly compacted fibres. It has the lowest sheetage.

TABLE 2

BOXBOARDS	Butter Boxes	Candy Boxes	Cereal Cartons	Cigarette Cartons	Cosmetics	Drugs (bottled)	Dried Fruit Cartons	Eggs (local delivery)	Envelopes (Stationery)	5c Candies	Florists Boxes	Frozen Foods	Hardware	Ice Cream	Jewelry Boxes	Liquor (bottled) Cartons	Milk Bottles	Salt Cartons	Shoe Boxes	Soap (flaked)	Bacon-Sausage, etc.	Suit Boxes	Stocking Boxes	Tooth Paste Cartons	Vegetable & Fruit Cartons
Bleached Sulphite	a											b		b			b				a				
Clay Coated Boards				x	x	x									x	x					a			x	
White Patent Coated			x	x		x										x				a				x	b
Kraft Board											x		x									x			b
Bleached Manila Lined Chip			x	x		x	b	x		x			x		c			b		a	a				b
White Vat Lined Chip		c			c																				
Mist Gray (other color)									x		x											x			
Manila Lined Chip						x	x						x						x						
Solid News								x	c				x												
Filled News					x										x										
News Vat Lined Chip			x					x	x	x			c						c				c		
Chipboard		c							c		x		x					c	c			x	c		

a—grease-proof b—water-proof c—line with cover paper

Rough - Smooth—Where but two finishes are used, the relative terms "rough" or "smooth" designate light or heavy weight board per caliper point.

7. Dimensions: In stating the dimensions of a sheet the width in inches is given first and the length next. Width is the measurement across the machine, i.e., space between slitter knives. Length is always the measurement in the direction of the grain, i.e., space between knife cut-off.

Special Surfacing: Boxboard is taken from the paper machine either in rolls or in sheets, cut to specified size and may be further processed to give a special type of surface. Some of these operations may be continuous with the paper machine where the equipment is so arranged, while others are treated in a separate division. Following is a description of some finishes.

Clay coated: Clay, with casein as an adhesive, is applied as a coating to boxboard and with subsequent calendering produces an excellence of color and brightness. It is the highest standard grade of board and is used largely for the better quality of folding cartons.

Grained: An imitation oak, leather, marble or other finish may be given a boxboard by passing it through printing cylinders appropriately engraved.

Lined or pasted: Any boxboard may be pasted to another or lined with a plain or fancy cover paper, parchment, glassine, etc., either in the roll or sheet form. Asphalt, properly prepared, or other similar adhesives, may be used to render the board practically water-proof. Pasted board may be built up to the desired thickness and made to serve a number of uses.

Requirements

Folding boxboards are required to fold when properly scored with no break in the outer fibres. They should give a clean edge when cut and have a surface adapted to printing and to receive any subsequent coating.

Set-up boxboards are made rigid to withstand bending in any direction and sufficiently sturdy to resist abuse. Many of these boards are subsequently lined on one or both surfaces with cover paper and must have a surface adapted to gluing. A common practice is to use a news vat lined chip or a single white vat lined chip, placing the vat lined surface on the inside of the box and decorating the outside with cover paper.

Table 2 shows general types of boxes (column headings) and the grades of board (at the left) from which they may be made. Such a statement is, of necessity, based upon averages, since styles of boxes vary the same as styles in clothing and poorer or better grades may be supplied to meet the desire of the buyer.

Folding and Display Cartons

An almost infinite number of variations of style and construction of folding carton has been developed to meet the needs of varying products, industries and packagers. Each of these can, however, be classified within some 73-odd categories for general types. Not every style is made by any one company, although none is such that it could not be if it were not for patents which preserve their use to the patentees or licensees. Insofar as possible, cartons and displays covered by patents are so stipulated in the descriptive information given. It is suggested that manufacturers who seek to have one particular style supplied to them make sure their carton supply source determines whether or not patents exist on that style. This information is well known by carton manufacturers or readily available to them.

A number of factors, in addition to style, enter into the specifying of folding cartons. The preceding article describes the various types of folding boxboard material which have been developed and indicates their special fields of applicability.

Decoration of the carton may be by letterpress or lithographic printing (the two most common and almost universal processes here used) or by some of the other processes described in the article on color and reproduction methods (see page 16). A number of special treatments may be given to cartons in the course of their production to achieve satisfaction of special requirements. Spirit varnishes, synthetic resins and lacquers may be utilized to achieve coated surfaces or brilliant finish and with high resistance to scuffing, staining and finger marking. Embossing may be utilized to raise selected portions of the carton blank above the plane of the rest. Pebbling—a form of over-all embossing—can likewise be utilized to achieve a decorative effect.

For moisture-proofing, paraffining or waxing is frequently utilized.

Essential Specification Data

The accompanying chart indicates the standard simplified method adopted by the Paperboard Industries Assn. for stating the dimensions of a folding carton. Faithful adherence to this method in specifying is essential if the purchaser is to be sure of securing a suitable container.

In addition to size specifications, the purchaser should specify the following:

(a) Stock. Specific description of type of board to be utilized.
(b) Gauge or thickness of the board.
(c) Copy and proofs (including opportunity to check same prior to production run).
(d) Engravings (whether furnished by purchaser, "on hand," or to be made and billed as an extra charge by the boxmaker).
(e) Printing (whether letterpress or lithography).
(f) Colors. Specific naming of colors, preferably by one or another of the standardized color sample systems, with mention of any peculiarities in use, such as fastness to sunlight or exposure to alkalis.
(g) Surface protection (i.e., varnishing, lacquering, etc.).
(h) Packing and method of marking container to facilitate inventory and factory re-use.
(i) Delivery shipping instructions.

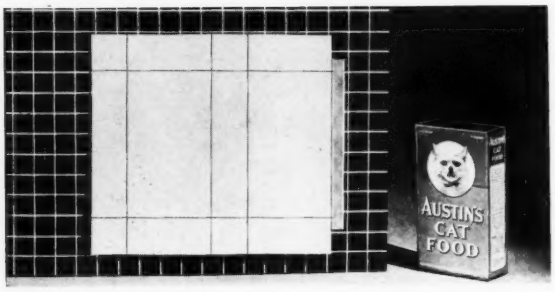
The illustrations on the following pages consist of two elements. The right-hand portion of each photograph shows a printed and assembled package, exactly as it would appear in use. The left-hand portion of each illustration presents a photo-diagram of each package in the flat and unprinted, showing its construction and proportions. The solid lines indicate scoring edges. Dotted lines indicate perforations or scores intended for tearing or opening of the container. Cross hatching indicates glue seams. The diagrams are photographed against a one-inch scale.

Cross References: Boxboards: Types and Selection, page 32; Specially Processed Cartons, page 68; Stayed and Stapled Cartons, page 72; Rigid Transparent Displays, page 150; Laminating and Combining, page 193; Paperboard Counter Displays, page 349; Weighing and Filling Dry Products, page 381; Carton Loading and Closing Equipment, page 438; Types and Functions of Adhesives, page 474; Corrugated and Solid-Fibre Cases, page 516.

We are indebted to Arthur Weiss of Robert Gair Co., Inc. for aid in the selections and descriptions of the principal types of folding cartons and display cartons shown on the following pages.

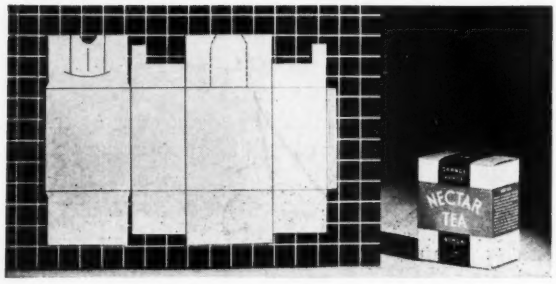
LEFT: SEAL (GLUED) END CARTON
RIGHT: REVERSE TUCK CARTON
DISPLAY CONTAINERS
State whether or not display panel extends from first or second dimension. (That is, whether like A or B.)
ONE-PIECE BOXES WITH COVERS
State whether or not cover extends from first or second dimension. (That is, whether like A or B.)
TWO-PIECE TELESCOPE BOX
In two-piece boxes dimensions of bottoms are given.
A
B
A
B
Cover

XUM



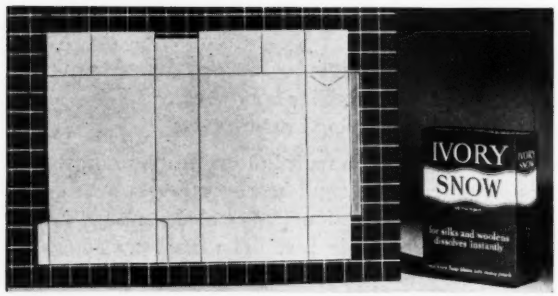
1

1. SEAL END CARTON. The most popular style carton for packing flour, cereals, sugar, salt, teas, coffees, spices, soap powders and a wide variety of products. Readily packed on high-speed automatic machinery but difficult to seal by hand.



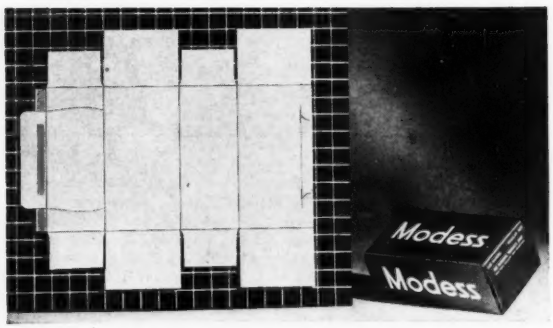
2

2. SEAL END CARTON WITH POURING SPOUT. Seal end carton, same construction as No. 1 with the additional feature of the patented pouring spout. This pouring spout makes it possible to dispense contents easily without spilling and affords a means of re-closing.



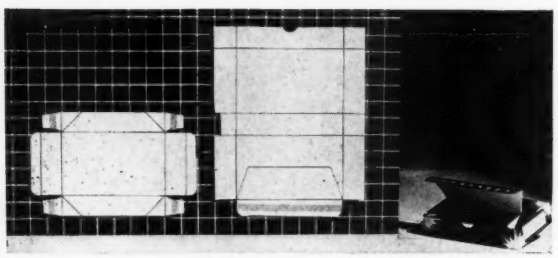
3

3. SEAL END CARTON for automatic packing and sealing. It is similar to No. 1 except that it has incorporated in its construction additional flaps on the bottom of the carton to prevent sifting. This carton is particularly suited for products which are milled or pulverized to such a degree that particles would sift through the regular seal end carton. This carton also has a unique pouring spout, which is formed by breaking the perforations in the top of the side panel. This is a patented type of carton.



4

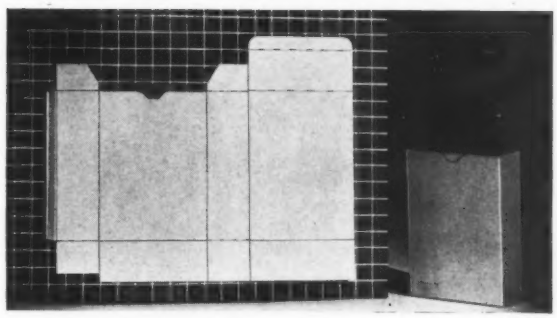
4. SEAL END BROADSIDE OPENER STYLE. An interesting development in a seal end carton which permits inexpensive, automatic filling through the ends of the carton which are later securely sealed. Carton is opened on the broad side, hence the name "Broadside Opener." Patented.



5

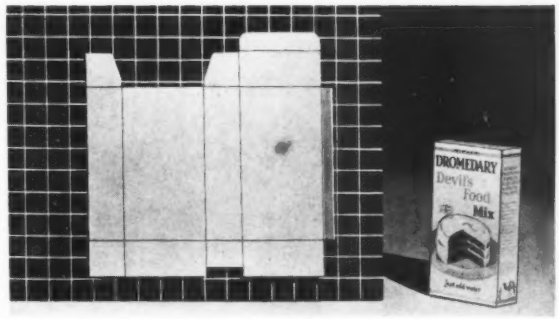
5. TWO-PIECE BROADSIDE OPENER. This is a variation of style No. 4 and is primarily used for the packaging of small pieces such as cube sugar. The individual pieces are first packed into the tray which is then easily inserted through the end of the outer carton. The outer carton is sealed automatically. The consumer can readily open the carton by breaking the spotted glue seam and tearing perforations. The container can be re-closed by the consumer by treating the hinged opening as an ordinary tuck flap. This is a patented type of carton construction.

6. TUCK TOP SEAL BOTTOM SHELL WITH TIGHT WRAP. Consists of a plain shell, often made of chip board, completely covered by a printed wrapper. Widely used for cereals and crackers. Requires automatic machine equipment. Outer wrapper prevents sifting, air deterioration and contamination from insects or dust. Newest development is to paraffin the printed side of wrap to give added protection to product. Wrap may be glued solidly to all six surfaces of the carton or "spot glued" at certain points.



6

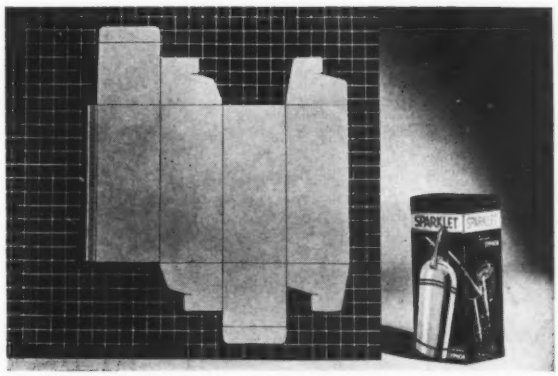
7. TUCK TOP, SEAL BOTTOM. Has the advantage of a solidly sealed bottom and convenience of the easily opened and closed tuck top, for ready accessibility to contents. Best suited to automatic packing because of difficulty of sealing bottom by hand. Note essential similarity to No. 6 with the exception of the use of printing directly on the carton blank.



7

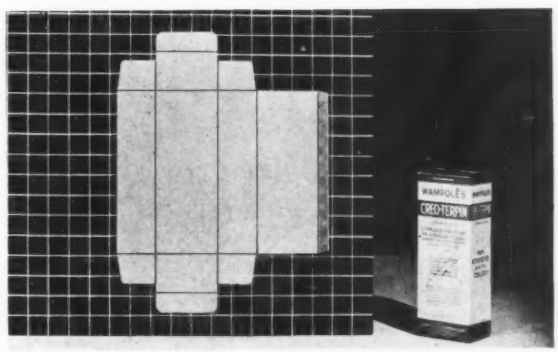
8. REVERSE TUCK CARTON. The most widely used of all carton styles for low-priced articles of all kinds. Easily set up by hand and adaptable to automatic packing. Convenient to open and close and exceedingly economical in manufacture because cartons interlock. This style not suited for heavy products, which must be held securely in the carton and require some positive means of locking the end tucks, or for powdery products, such as flour, salt and sugar, which are likely to sift through and thus require a seal end carton. Ready accessibility and low cost make this style carton ideal for five- and ten-cent units of candy, such as cough drops, as well as shaving creams and tooth paste in tubes. Type illustrated has special locking side flaps. See description No. 9 below.

9. REVERSE TUCK CARTON WITH ARTHUR LOCKS. Side flaps, top and bottom, or just the bottom, lock to prevent heavy contents from breaking through. Used principally for packing jars and bottles containing toilet preparations, medicines and condiments, which must be held securely in the carton.

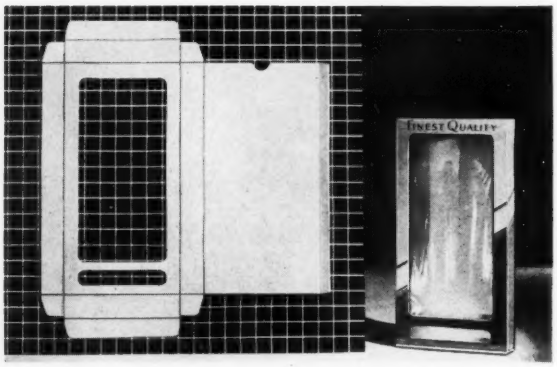


8-9

10. STRAIGHT TUCK CARTON. This carton has no advantage over reverse tuck carton, but is required and extensively used with high-speed automatic cartoning machines. Must be made with right and left glue seams to secure economy of interlocking for economical manufacturing. Serves as an effective and satisfactory low-price package for the same large variety of products using the regular reverse tuck carton. When used for products packaged in glass bottles, it is advisable to equip the bottom flaps with a positive locking device to insure against the possibility of the bottle falling out of the carton. Inserts or corrugated liner may be used for added protection of the product.

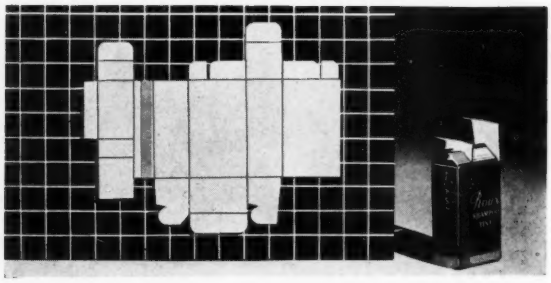


10



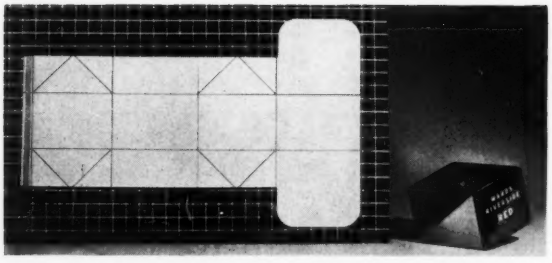
11

11. STRAIGHT TUCK CARTON WITH TRANSPARENT CELLULOSE WINDOW. Contents of this package fully protected from soilage yet visible to consumer through transparent window.



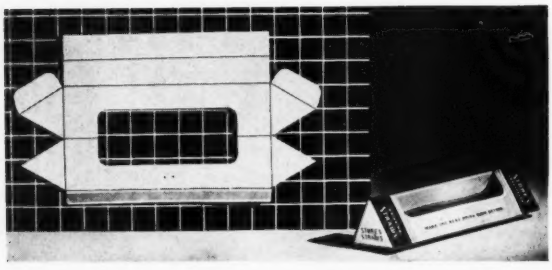
12

12. STRAIGHT TUCK CARTON, "2 in 1" STYLE. Patented carton made with an inside divider which, when folded into position, forms two separate compartments. Made in one piece, delivered in conventional knocked-down form. An ideal carton for a combination sale, such as a shampoo and a hair tint, or a bottle with medicine dropper or dispensing unit.



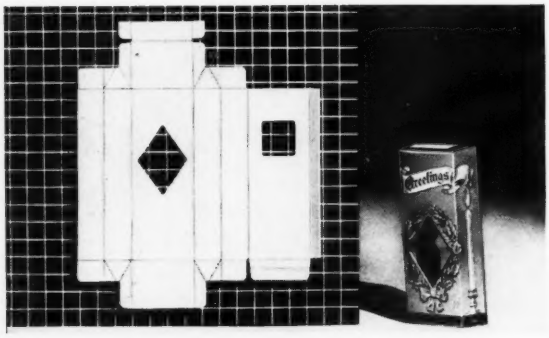
13

13. BELLOWS END CARTON. Web end construction forms a strong and tight end closure by hand assembly. Carton may be opened and tightly re-closed at will. Note simplicity of construction. Web end construction provides substantial protection against sifting when granular or crumbling products are packed in this type of carton.



14

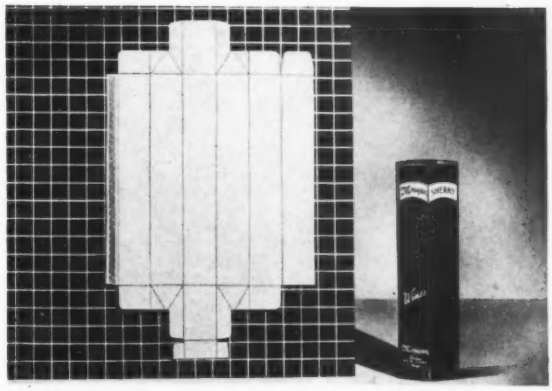
14. TRIANGULAR STRAIGHT TUCK. This novel shape carton is easily assembled and filled by hand. Its shape and location of transparent window makes an unusual display of contents. In packing, alternate layers of cartons are reversed so that window portions are protected by the side walls of the cartons they rest upon. Note how rear wall (i.e., wall immediately opposite die-cut window) is scored to permit the pasted carton to be shipped flat.



15

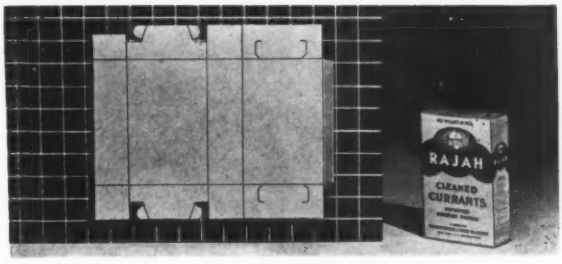
15. RECTANGULAR CARTON, TUCK TOP AND LOCK BOTTOM. Same as Style No. 16 except that it can be made for flat or rectangular shaped products. The diamond shape and the rectangular die-cut walls found on the front and back faces of the unit here shown are designed to permit the display of labels on the inner container to meet merchandising or legal requirements. This is a patented type.

16. HEXAGONAL CARTON, TUCK TOP AND LOCK BOTTOM. A patented carton that combines novelty with ease and speed of setting up. Quick-closing top requires only a single tuck or flap, while the Hibson lock bottom insures a permanent seal. Capable of holding the weight of a comparatively heavy inner package, such as a wine bottle, liqueur bottle or other product packed in glass. Types of this sort are extensively used for display purposes and as seasonal promotional cartons for products ordinarily merchandised in their glass containers alone.



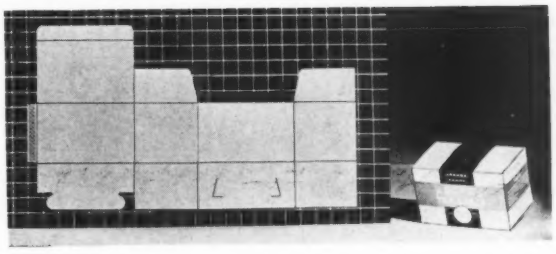
16

17. GREENLEAF LOCK CARTON. Locks at each end securely. Widely used for packing dried fruits and other heavy bulky products. Also serves as a packer or carrier unit for a number of individual cartons. Locks of this type provide sufficient strength to support a comparatively great inner package weight, yet are so constructed as to permit of fairly frequent opening and re-closing by the consumer.



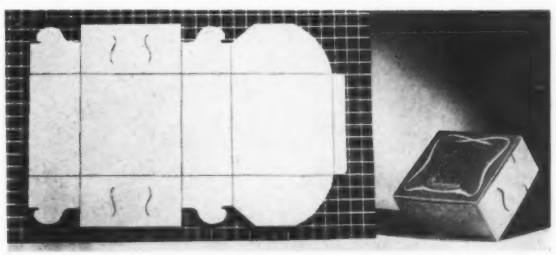
17

18. TUCK TOP CARTON WITH GREENLEAF BOTTOM. Combines the ease of closing a regular tuck top with the safety of a securely locked bottom, to prevent possibility of heavy contents falling out of carton. Quickly closed by hand. Use of the special lock bottom adds slightly to carton cost but is often found desirable for heavy products.



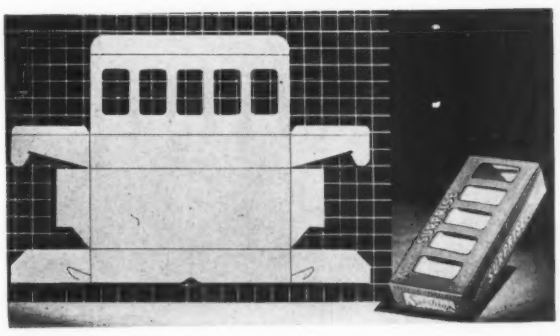
18

19. ONE-PIECE CARTON WITH FOUR HOOK CATCHES. An economical carton for local bakery use where small quantities of several sizes are required. Two catches on each end hold the carton upright. This style is not sufficiently durable to stand long distance transportation or rough handling, but is used by bakeries for packaging cake sold in their own retail stores and carried home by consumers. Also used on routes for delivery-trucks-to-consumer purchases in which case it is frequently made with a window of transparent cellulose.



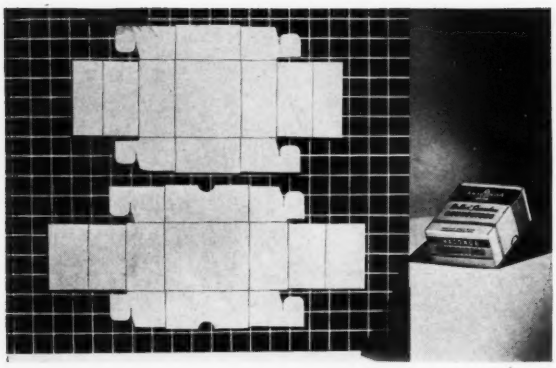
19

20. PETERS LOCK CARTON. Derives its name from Peters' machines which are used for automatic forming and lining. Widely used for biscuits, crackers, lard and shortenings and adaptable to wide variety of large volume products. The multiple window cut-outs in the assembly here shown are designed to provide a high degree of visibility for the assorted items packed in this unit while, at the same time, maintaining the strength and rigidity of the cartonboard. A single strip of transparent material would be utilized to form all five windows with a single applying operation.



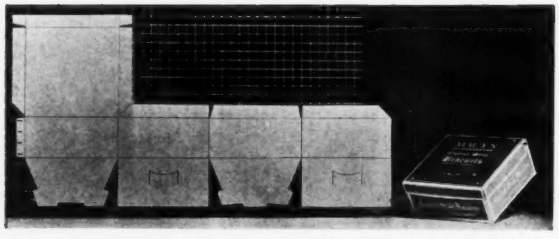
20

XUM



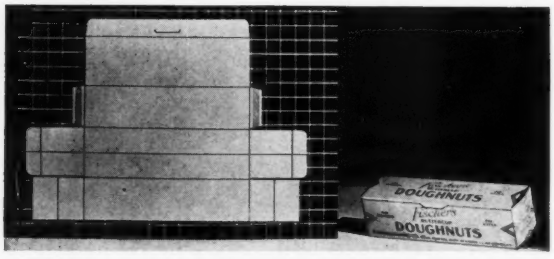
21

21. TWO-PIECE TELESCOPE CARTON WITH OVERLAPPING ENDS. This style carton assembled and folded by hand. Ends overlap and are held against the side by friction, but may be glued for additional reinforcement. A development of the overlapping end carton is an extra length tab provided as an additional protection on the top and bottom. A similar reinforcement along the sides can be provided for strength.



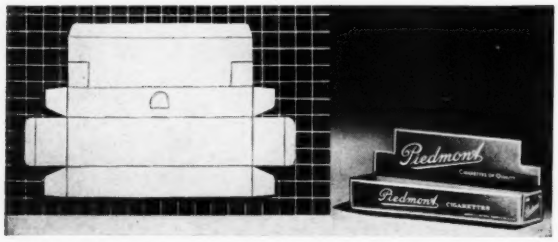
22

22. QUIKLOC STYLE CRACKER CADDY. Originally a caddy was a container for bulk goods which were dispensed in small units. Illustration shows one holding several pounds of crackers which is bought by many consumers. One-piece collapsible construction with patented bottom which is quickly set up. Two corners of cover require metal stitching by user. Note how the construction of the bottom flaps provides a multi-layer bottom when the caddy is erected.



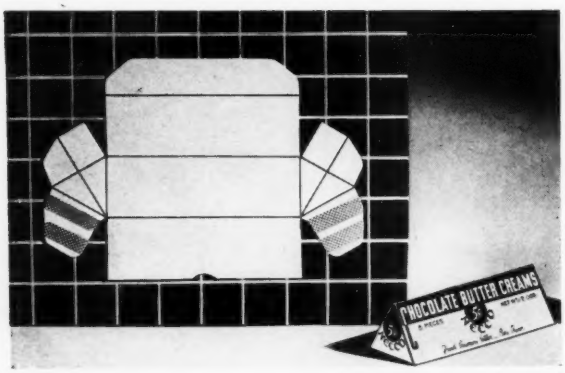
23

23. ONE-PIECE COLLAPSIBLE CARTON. A simple one-piece container serving as a carrier especially useful where quick set-up and low cost are factors. Used for bakery goods, cigarettes and many other products. Shipped to user in knocked-down form, so that it occupies a minimum of storage space. Note cross hatch glue seam indications. These tabs adhere to the outer ends of the bottom-most tabs. The intervening wall forming the bottom of the container is scored to fold in half, lengthwise, when shipped. This is snapped into erect position and given required rigidity by turning up the side wall tabs.



24

24. ONE-PIECE BRIGHTWOOD STYLE CARTON. A widely used one-piece carton for large scale production. Automatically formed, glued along the vertical panels, filled and sealed by Brightwood machines in the package user's plant. Definite economies in packaging can be effected by the use of this style carton if sufficient production is regularly handled to justify the use of this automatic equipment.



25

25. TRIANGULAR CARTON. This carton is received in a glued knock-down form. It is easily assembled for filling by pushing the ends inwardly. After filling, the carton is closed by tucking in the top panel. Its novel shape adds display value to the individual carton. Note score lines on side walls. The folding of these walls permits shipment of the pre-glued carton in the flat.

SINGLE SOURCE OF SUPPLY

Burt is a single, reliable source of supply for your large quantity purchasing of:

(1) Boxes (automatically produced)
- **a. Small**
- **b. Round**
- **c. Window**
- **d. Transparent**

(2) Cartons

(3) Merchandise Displays

The production of boxes, cartons and displays in one huge modern plant assures uniformity of quality, color, printing in complete package and display lines. Our plant, equipped with our own automatic box-making machinery, is large enough to meet the greatest demands as to quantity, without sacrifice of famous Burt quality. Central location provides quick deliveries, overnight in many cases to the South, East and Middle West.

Consult us for boxes, cartons and displays.

F. N. Burt Company, Inc.

500-540 SENECA STREET, BUFFALO, N. Y.

NEW YORK CITY
630 Fifth Avenue
Room 1461

PHILADELPHIA
A. B. Hebeler
P. O. Box 6308
W. Market St. Sta.

NEW ENGLAND
J. Ansell
491 Main Street
Cambridge, Mass.

ST. LOUIS
M. P. Yates
706 Chestnut St

ATLANTA
Herbert F. Croen
P. O. Box 907

CHICAGO
919 N. Michigan Ave
Room 2212

CLEVELAND
W. G. Hazen
P. O. Box 2445
E. Cleveland, Ohio

CINCINNATI
221 Walnut Street
Telephone: MAin 0367

MEMPHIS
W. F. Shepherd
268 Madison Avenue

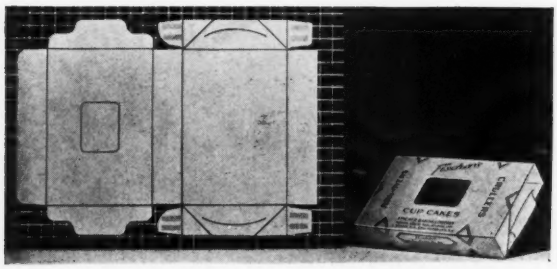
MINNEAPOLIS
J. E. Moor
3329 Dupont Ave. South

LOS ANGELES
Louis Andrews
623½ South Grand Ave.

KANSAS CITY
Elmer J. Schwartz
217 Plaza Theatre Bldg.

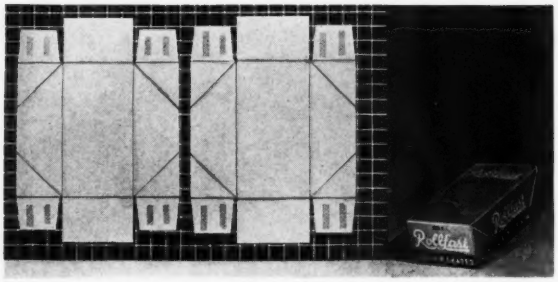
CANADIAN DIVISION
Dominion Paper Box Co., Ltd.
469-483 King Street, West
Toronto 2, Canada

XUM



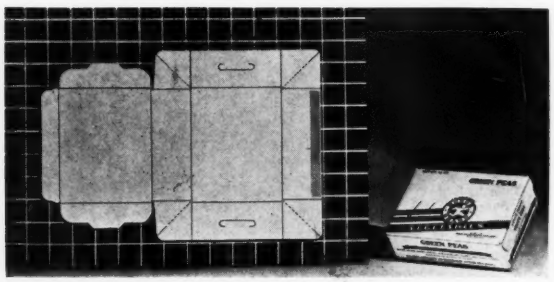
26

26. ONE-PIECE COLLAPSIBLE CARTON. A quickly set-up carton, made with tongues on the cover which tuck into slots on the sides, making this style especially well suited for bakery goods and similar products. Furnished with transparent cellulose window to allow view of product without opening carton, which is a most important factor in keeping food products fresh and avoiding spoilage from exposure to dust, dirt, flies or frequent handling prior to sale. Is sometimes used with an inner band or liner, placed around a cake, the carton being made sufficiently high to prevent the cover coming into contact with the frosting.



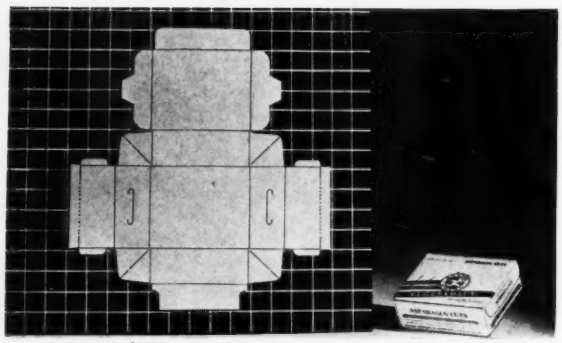
27

27. TWO-PIECE FULL TELESCOPE CARTON. These cartons are glued in collapsible form by carton manufacturer and shipped to user in that manner. Quickly set up by infolding to an upright position. Note that top half of container is slightly larger in all dimensions than lower or bottom half. This permits of telescoping without distortion of the container. Size, in such instances, must be accurately controlled to provide a tight—but not too tight—fit.



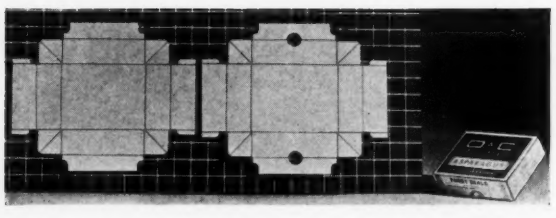
28

28. ONE-PIECE WEB ENDS AND SNAP LOCKS. This carton, delivered in glue tube fashion, is easily and quickly assembled. The carton shown was primarily developed for frosted foods, which require tight end closures and ease and speed in packing. It is well suited for various other types of products which require features mentioned above plus economy. Patented.



29

29. ONE-PIECE SIMPLEX STYLE CARTON. Combines rigidity, finish and strength of set-up box and economy in cost, shipping and storage of a carton. Quickly set up without machinery. Made in all sizes from small candy boxes to large containers for blankets. One-side printing. Made with or without display lids and slip-over covers. No raw cut edges or outside locks mar the outside printed surfaces or finished appearance of the carton. Patented.



30

30. TWO-PIECE SIMPLEX STYLE CARTON. A carton construction which is rigid, easily set up and free of locks or tabs on exterior surfaces. The web corner construction prevents leakage when packing frosted foods. This style is also adaptable for shoes, textiles and other types of products requiring a two-piece carton. This is a patented type.

MILLER HAS A BARREL OF GOOD IDEAS!

There's MORE Where These Came From!

Whether you need an elaborate set-up box or a simple container — it will pay you to come to the men who created and produced the unusual packages shown on this page. They are only a few examples of a complete creation-production service which includes packages of box and carton boards as well as of transparent materials. We have the facilities and the experience to produce your order ingeniously, quickly, economically.

1 *VACCINE BOX*. Bringing Sharp & Dohme's vital serum to emergency cases safely, this well designed and strongly constructed box helps guard America's lives.

2 *ACETATE BOX*. Interesting example of the glamorizing effect of sparkling transparency on a luxury product. We make all shapes and sizes of transparent containers. For Charles Jacquin et Cie, Inc.

3 *RECORD BOX*. A display box creation featuring a new slant on Victor record merchandising with a die-cut picture of the artist.

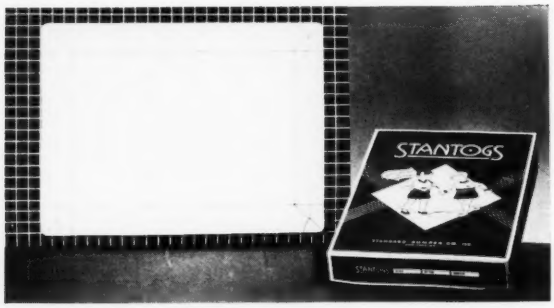
4 *CANDY BOX*. Functional unit for display and for safe mailing of James' famous Atlantic City salt-water taffy.

5 *REAL ESTATE BOX*. The most dramatic real estate presentation ever made. Set-up model of building, blueprint of surrounding property all beautifully displayed in proper proportion. For Frank G. Binswanger, Inc.

6 *CARPET BOX*. An entire little room samples a "carpet" in this neat set-up mailing box with a drop-leaf front used by Hardwick & Magee Co. with excellent results as a promotional piece.

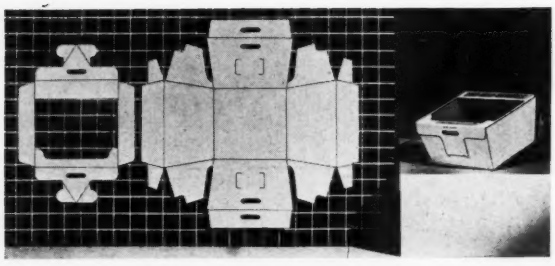
Walter P. Miller Company, Inc. · 452 YORK AVENUE PHILADELPHIA, PA.

XUM



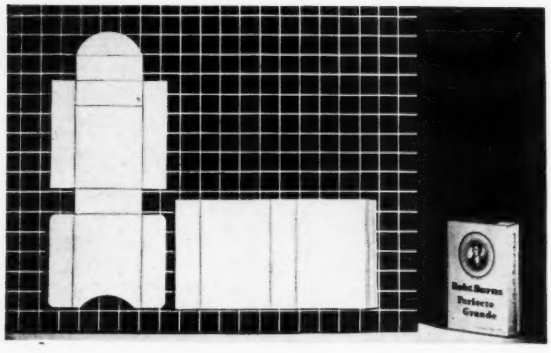
31

31. NOLOX CARTON. A new type of carton which has already proven its value from an economical standpoint. This carton is delivered in flat pre-folded form and it is only necessary to raise the sidewalls with a quick snap to set them up into rigid position. The specially designed corner lock is so arranged that after carton is set up the sides and ends do not collapse. This carton can be made with separate or attached cover. Patented and manufactured under license on special equipment.



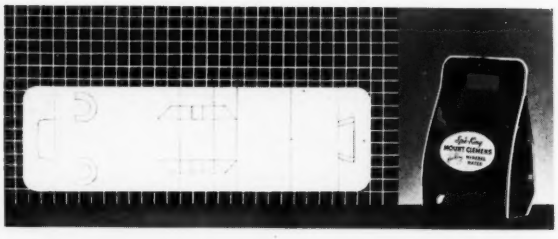
32

32. BERRY AND VEGETABLE CARTON. This type of carton has proved its adaptability to replace the ordinary wooden basket used for berries, small fruits and vegetables. Overlapping sides are wire stitched to set in proper position for use. Raised bottom and slotted sides insure proper ventilation for contents. Can be equipped with transparent window cover with locks to hold it secure. Patented.



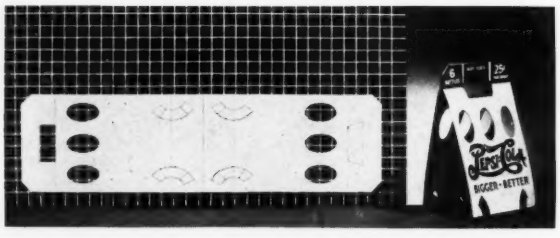
33

33. TUBE AND SLIDE. Consists of a folding inner portion, variously contrived, to be inserted in a tube on which the design is printed. Access to the contents is easy and quick. It offers adequate protection for a wide variety of products, such as cigar packs holding five or ten popularly priced cigars. When this style is made with an inner tray it is well suited for pills and capsules which may be carried in the consumer's pocket.



34

34. BOTTLE CARRIERS. This construction has numerous advantages for doing an excellent job of carrying three or six bottles. It requires a minimum amount of material having little or no waste, exceptionally good printing surface and more than enough strength. When assembling this carrier for packing, a simple metal form makes setting up semi-automatic. Patent applied for.



35

35. THREE-BOTTLE CARRIER and DISPLAY. This carrier has the feature of being an effective display and carry-home carton combined. It requires printing two sides; however, printing is only required on the inside for the display feature. For economy, therefore, the outside printing could be eliminated. Patent applied for.

Take a tip FROM THE KIDS

You're wise to the role national and local advertising plays in putting your product across, but don't forget buying is still done by impulse. People still buy because a package demands their attention — sells so convincingly that it can't be passed up.

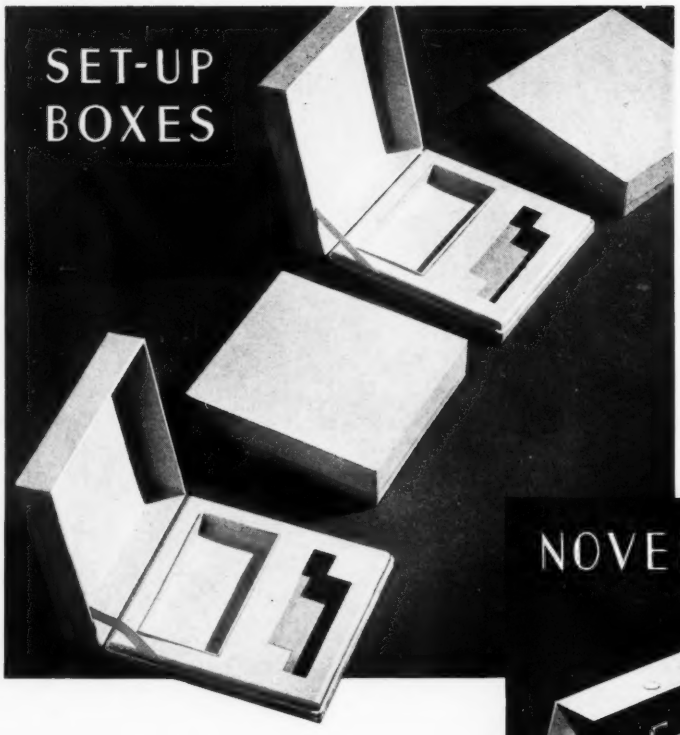
Whether or not your sales program is augmented by national advertising it pays to be particular about your cartons. Often they're your only salesman at the vital point-of-purchase.

There are plenty of reasons why so many manufacturers are enthusiastic about Michigan Cartons. Tailored by a complete packaging staff of experienced designers and trained personnel, Michigan Cartons are constantly plugging for increased sales and greater product acceptance. They're thoroughly tested for strength, uniformity, packaging accuracy — for eye-appeal and buy-appeal. That's why Michigan Cartons will work so successfully for you. They're custom built for your product.

BOXBOARD ★ FOLDING CARTONS ★ JUMBO AND DISPLAY CARTONS

MICHIGAN CARTON CO.

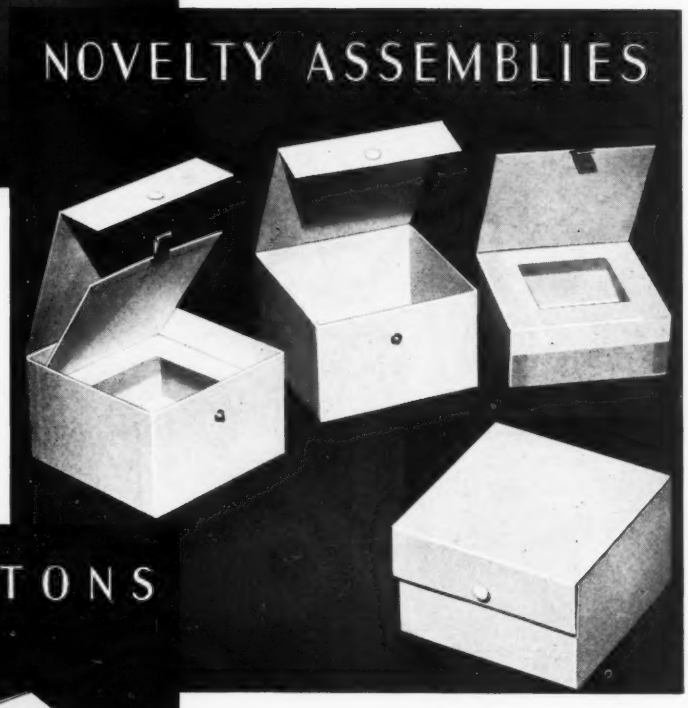
BATTLE CREEK, MICHIGAN



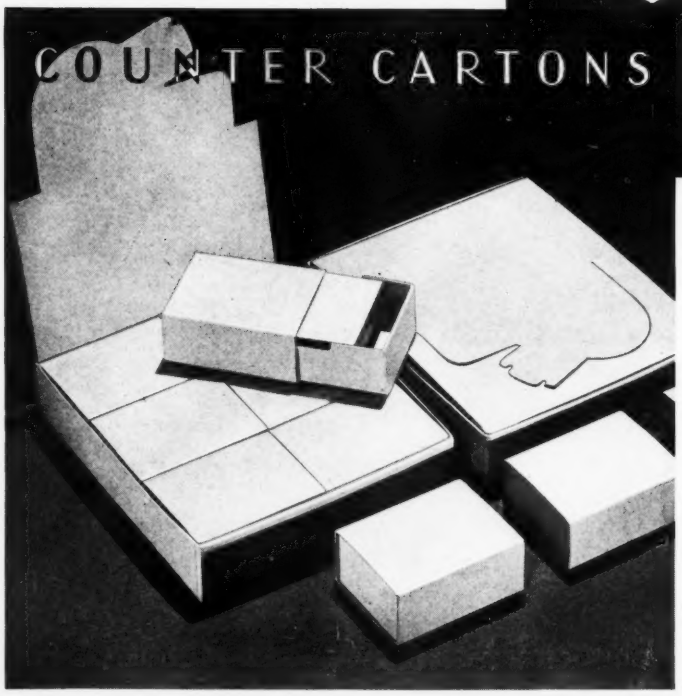
WARNERCRAFT

THE FINEST WORD IN PACKAGING

WARNERCRAFT is a complete cardboard packaging service. Over many years, for many customers, we have succeeded by precise workmanship and modern machinery in establishing a record of quality packaging, whether for the most inexpensive folding box or intricate luxury assemblies.



WARNERCRAFT
THE FINEST WORD IN PACKAGING



A Better Package—Or A Less Expensive One?

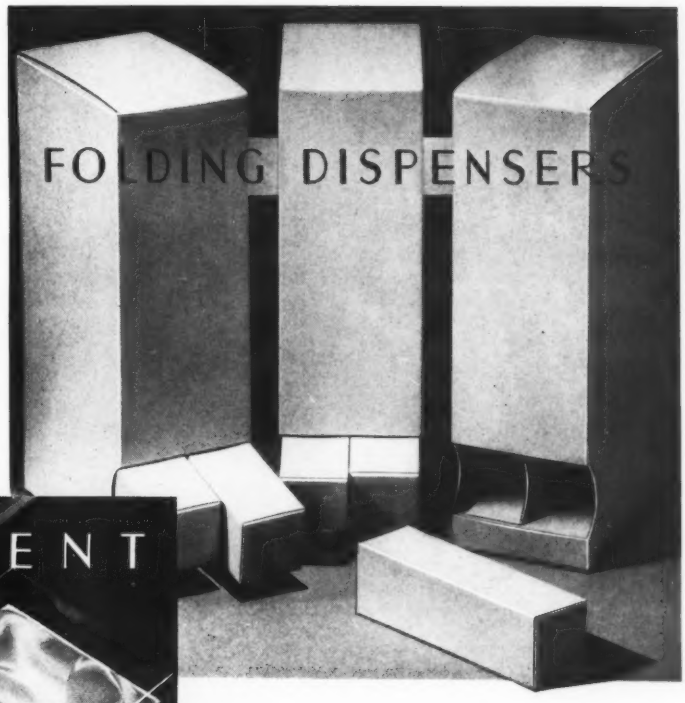
Some manufacturers come to us for one reason, some for another. With our complete modern facilities and designing experience we have created many unusually striking packages which, by their beauty and appeal, have considerably stepped up a product's sales.

At other times, for products that were meeting stiff price competition, we have reduced packaging costs by a most

WARNERCRAFT

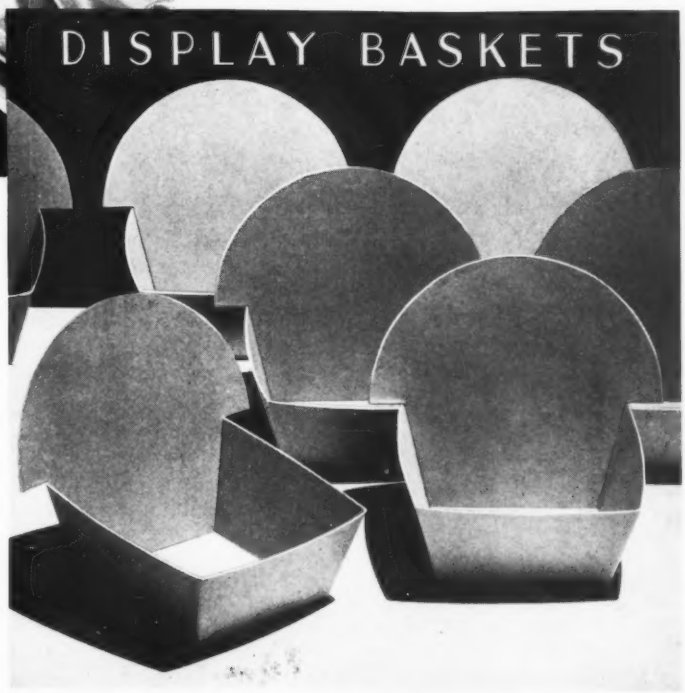
THE FINEST WORD IN PACKAGING

We maintain a full-time designing staff, experienced in box construction, display and practical merchandising. We are prepared to suggest distinctive new packaging units, or to cooperate with manufacturers and distributors in adapting their own designs to more effective packaging use.



WARNERCRAFT

THE FINEST WORD IN PACKAGING



careful and simplified construction of the box, but without any sacrifice of quality.

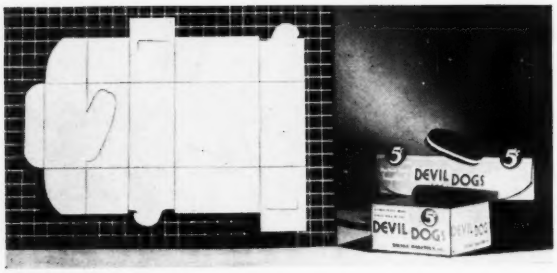
Possibly you are considering some new packaging for your product. Possibly we may be able to create exactly what you want. At least, Warnercraft Packaging facilities are available, if you care to talk with us.

THE WARNER BROTHERS CO.

BOX DIVISION **BRIDGEPORT, CONN.**

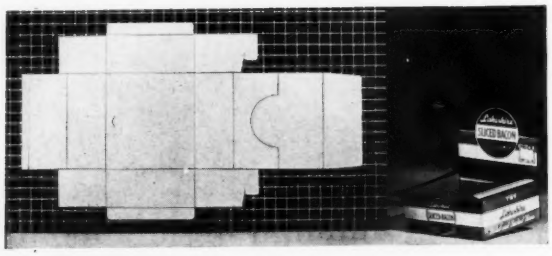
200 Madison Avenue **New York, N. Y.**

XUM



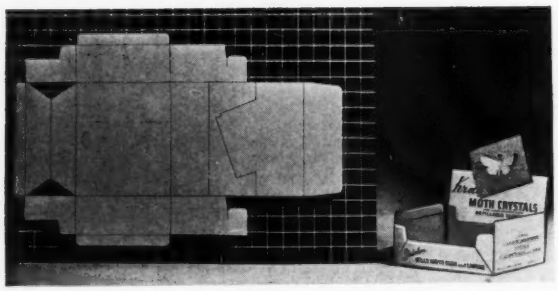
36

36. ONE-PIECE CARTON WITH TWO HOOK CATCHES. An economical carton for local bakery use, where small quantities of several sizes are required. A catch lock on each end holds the carton upright. This style is not sufficiently durable to stand long distance transportation or rough handling, but is used by bakeries for packaging cakes sold in their own retail stores and carried home by consumers. Also used on routes for delivery-truck-to-consumer purchases, in which case it is made with a window of transparent cellulose.



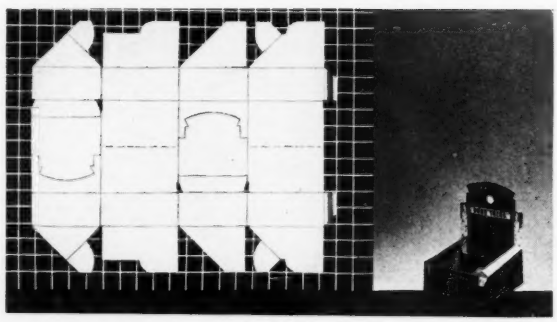
37

37. ONE-PIECE OVERLAPPING FRONT—LOCK BACK PANEL, FOLD COVER. Economical to manufacture and extensively used for display purposes, this box has the added strength of the overlapping front which is not provided in the straight front box. The box can be made with panel-fold style display top, making possible the economy of printing on only one side of the sheet.



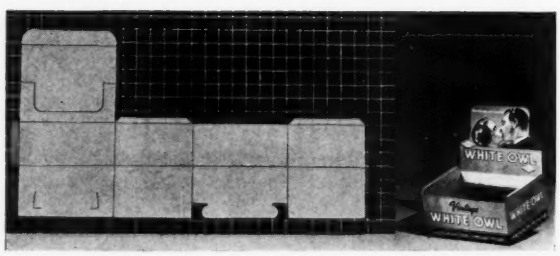
38

38. ONE-PIECE OVERLAPPING LOW FRONT DISPLAY CONTAINER. Similar to No. 37 except front is cut down to show face panel of articles when they are packed in an upright position. The tuck flap at the top of the container should be made long enough to provide full protection for the packaged contents at the front corner, where the low wall of the display container offers a relatively weak point.



39

39. QUICKSET TWIN CARTONS. A new high speed economical twin carton that is designed to employ one piece of box board. They are so arranged that an easy pull at the corners separates them. With a flat carton left in each hand—a slight push against your chest sets them up automatically. These cartons are ideal for high speed production lines where space is limited. Patented and manufactured under license on special equipment.



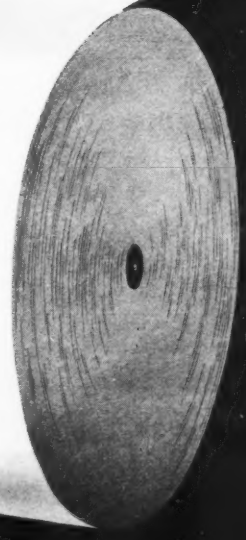
40

40. PANEL FOLD DISPLAY CONTAINER WITH LOCK BOTTOM. Simple in construction and setting up. Cover is so arranged as to make an attractive display panel. Protective cover is optional. Stands flat on the counter and provides good visibility to the displayed items. Requires printing and coating only on one side of the board.

A VERSATILE SOURCE . .

FOR COMPLETE CARTON PACKAGING

4 BOARD MILLS
DAILY OUTPUT
500 TONS BOXBOARD
•
2 MILLION CARTONS
•
1¼ MILLION SQ. FT. CORRUGATED BOARD



When the folding cartons, shipping containers, and other materials which make up your "unit package," come from various sources, it is often difficult to obtain complete coordination of specifications, shipping dates, and other details.

ENJOY FREEDOM FROM PACKAGING WORRIES BY PLACING THE ENTIRE RESPONSIBILITY WITH ONE COMPETENT SUPPLIER.

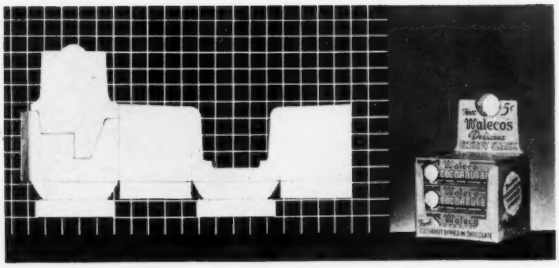
Our board mill and box plants, in one central location with resident management, produce a wide range of paperboards, folding cartons, corrugated and solid fibre shipping containers and specialties.

They are well equipped for large production, yet there is that flexibility which results from compact unit organization.

You are cordially invited to consult our staff—men skilled and experienced in package creation, merchandising and production.

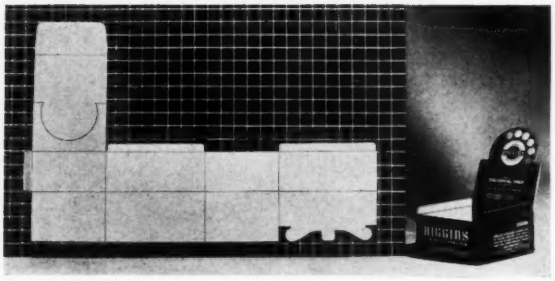
THE OHIO BOXBOARD CO.
RITTMAN, OHIO

XUM



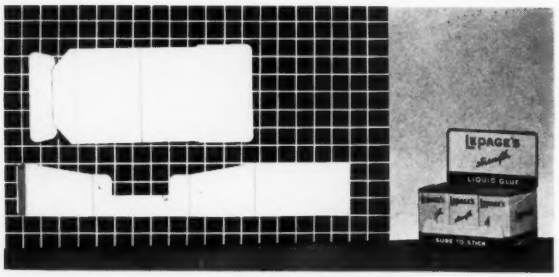
41

41. BROOKS TWIN DISPLAY CONTAINER. This container is a lock bottom low front, with a pivoting swing display card. The display card is designed to give the effect of printing on two sides. This effect is gained by twisting the card 180 deg. when display is set up.



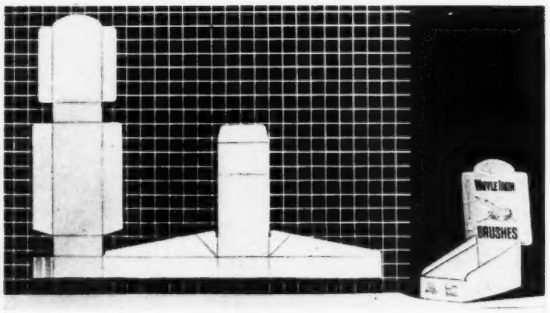
42

42. PANEL-FOLD DISPLAY CONTAINER—WITH THREE CATCH LOCK BOTTOM. Same as No. 40 except bottom has three catches to carry heavier contents. The reader will note the wide number of variations in tab locking devices which are available to secure either ease of opening, sturdiness, the ability to carry weights, or some special feature such as tamper-proofness.



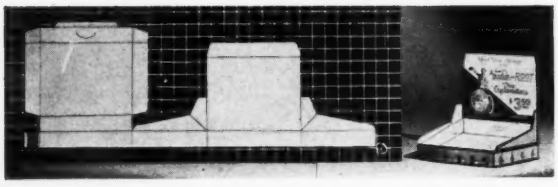
43

43. BROOKS TWIN DISPLAY CONTAINER. A patented twin display container, the two sections nesting into each other, giving the dealer two distinctive counter displays. This unit of two containers requires a protective sleeve for shipping. It is economical and easy to set up by the packer and the retailer.



44

44. BROOKS DOUBLE-COVER DISPLAY CONTAINER. An elevating display in which the retailer must set up the display panel in order to uncover the contents, with a positive wing type support for elevated section of the container. An important feature in containers of this type is the element of fool-proofness in respect to the dealer. The ideal calls for a unit for which there can be only one way—the correct way—of opening for display purposes. Short of this ideal, the fullest, simplest and best illustrated descriptions for setting up will prove of aid to the dealer.



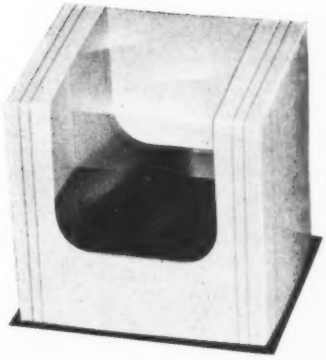
45

45. BROOKS TILTING DISPLAY CONTAINER. This style is equipped with a rear tab which the dealer elevates and secures in the rear panel, effectively displaying the merchandise at a desirable angle. This tab may be seen as indicated in the diagram-photo, upper left hand corner. This is a patented display container type of construction.

Look at LOOKIT* *.. Your Customers Will!*

LOOKIT boxes are undeniably attractive. Their sparkling transparent windows give a clear view of the contained merchandise. And their set-up construction gives them rigidity—and your product, protection—which makes them stand up and sell under rough handling. Ideal for golf balls, haberdashery, cosmetics, silverware, and any other product which utilizes a rigid transparent or set-up box.

Color possibilities are infinite, both on the paper wrap and on the acetate window, which may be printed if desired.



STRAIGHT SET-UP

boxes with beautifully embossed and printed wraps are also included in our complete box-making service. Leaders in a dozen fields choose us as their box creator because of our extensive design and production facilities.

*"LOOKIT" box Trade Mark Reg. U. S. Pat. Off. Made under one or more following U. S. Patents. Des. 108605-108606. Other Patents Pending.

Come to **Flower City Specialty Company**

ROCHESTER NEW YORK

New York Office • 30 East Forty-second Street • MUrray Hill 2-3447

XUM

jogs of the months

HERE are six of many contributions made by R. T. G. to the 1940 package parade. Presented in "Before and After" form, these monthly mailing pieces describe R. T. G.'s perception for improving salability thru package and counter display improvement.

If you have not received your copies of these case histories, write today to have your name added to our mailing list. They contain many ideas which may be adaptable to your particular problem.

XUM

Jobs of the Months

Each month R. T. G. selects the one package or display that represents the most outstanding contribution made for one of its customers during that period.

In each instance here reproduced, note the change is from an entirely different package. Each "Job of the Month" is a complete thought incorporating a new approach to "point of sale" merchandising for that particular customer. Of most importance *to you* is the fact that in all but one case, the entire sales idea was visualized and developed entirely by R. T. G.'s representatives. Those same creative facilities are at your disposal for the asking.

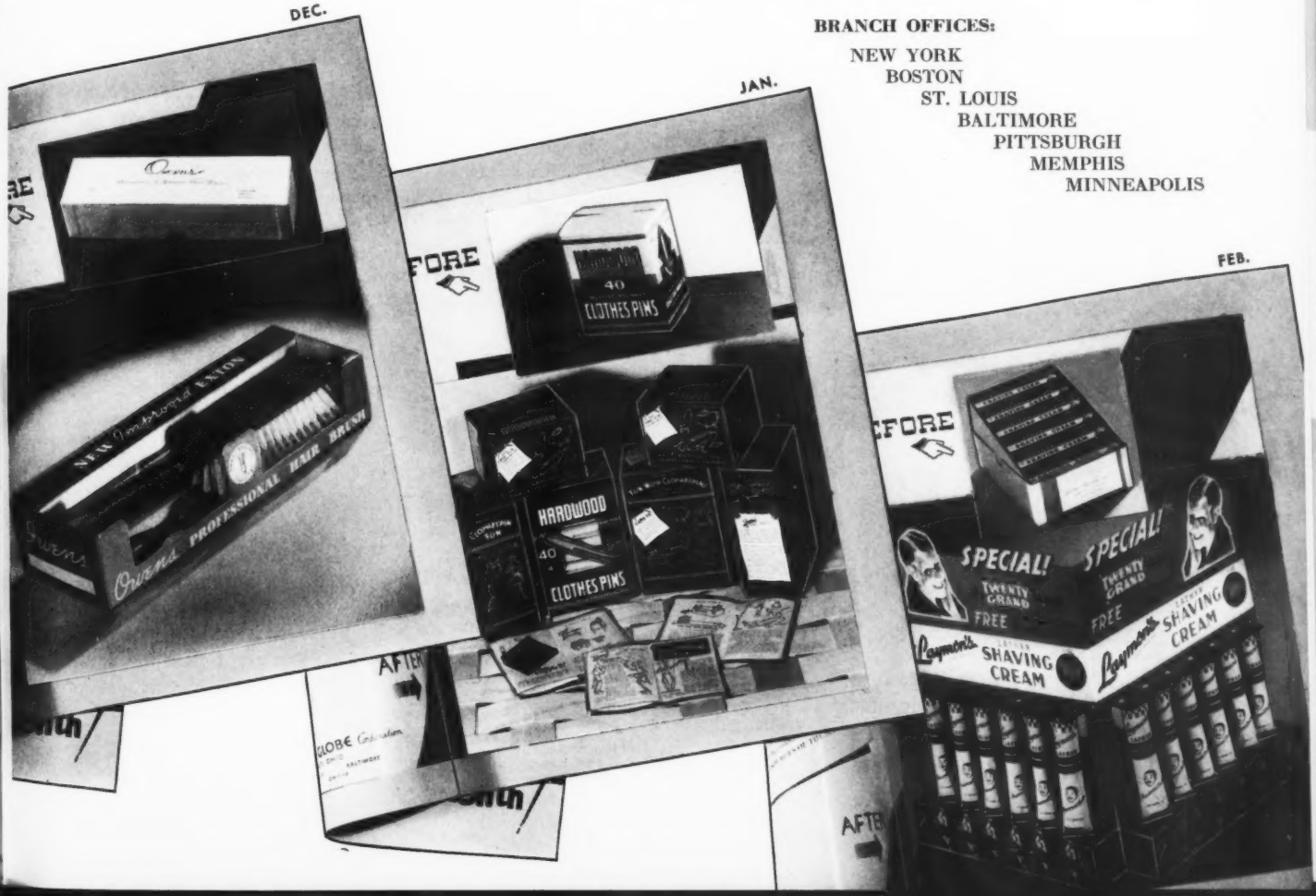
Remember the lowest priced carton supplier is not always the cheapest! For the ultimate value is the embodiment of appearance, workability, and the *creative resources of the supplier.*

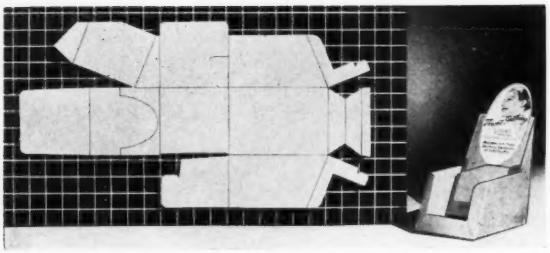
The RICHARDSON·TAYLOR·GLOBE Corporation

4501 W. MITCHELL AVENUE, CINCINNATI, OHIO

BRANCH OFFICES:

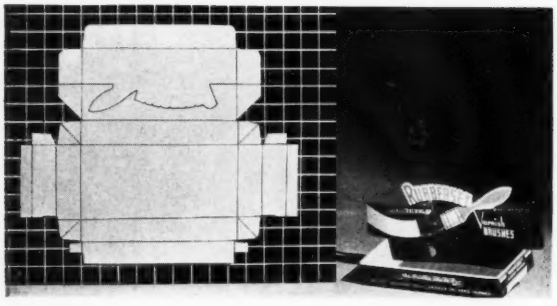
NEW YORK
BOSTON
ST. LOUIS
BALTIMORE
PITTSBURGH
MEMPHIS
MINNEAPOLIS





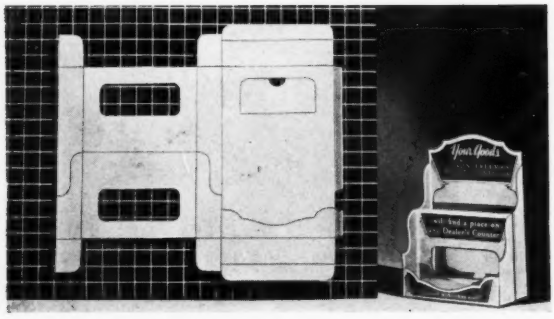
46

46. RHOMBOID DISPLAY CONTAINER. The sloping sides and special construction of this container permit of displaying goods in slanting tiers. Provided with protective sleeve, it may be shipped packed in set-up form ready for dealer to display. Well suited for small items such as cartoned bottles and tubes. One of a number of variations of the Rhomboid class.



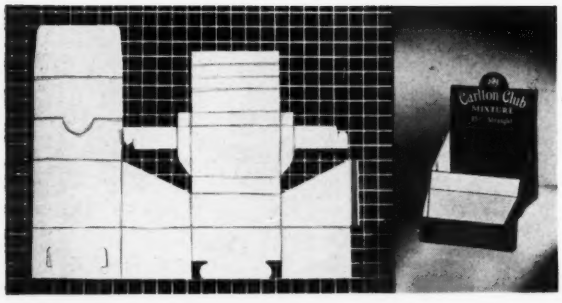
47

47. ONE-PIECE SIMPLEX CARTON DISPLAY. An efficient container and display unit. Die-cut cover offers excellent advertising display. Easily set up and free of locks on the exterior surfaces. Its most popular use is for one-dozen units such as paper wrapped toilet soaps, automotive or hardware items. Does not require protective sleeve as cover closes with front and side tucks. The side tucks, furthermore, increase the size of the display panel itself.



48

48. SKYSCRAPER (BROKEN BACK) DISPLAY CONTAINER. Patented container for displaying products in two tiers in an upright or "skyscraper" manner. Made with easel to hold second tier in raised position. Scored in center so that for shipping it folds up, but is readily set up for display by the dealer. When folded for shipping, the two halves of the unit so interlock as to form one flat, rectangular carton with all merchandise protected on all sides.



49

49. FRONT PANEL, LOCK BOTTOM DISPLAY CONTAINER WITH POCKET. An ingenious display by which contents are sold from the stock packed in the main portion of the container, while the pocket front permits an effective continuous display of the actual article. Prevents unsightly gaps in the display line, which is a weakness in many display containers. Note how the pocket front hangs below counter level or level of step on which main portion of display rests.

THE DIRECT ROUTE

TO COMPLETE PACKAGING SERVICE

GAIR

On the streets, in warehouses, in retail stores—even in most of the homes in America, you see countless examples of our complete packaging service every day. *These corrugated boxes, folding cartons and displays* have one main objective, to make it easier for the manufacturer to sell more merchandise with a greater net profit per unit.

To attain this objective, our research and creative departments spend days, and sometimes weeks, of intensive study in order to produce a single package or display that is structurally and artistically perfect.

No matter how small or large the order—how simple or difficult the undertaking, just a brief outline of your packaging or display problems will start our complete packaging service working for you.

ROBERT GAIR COMPANY, INC.
155 EAST 44th STREET, NEW YORK CITY

GAIR COMPANY, CANADA, LTD.
372 BAY STREET, TORONTO, ONT., CANADA

FLOOR DISPLAY STANDS
Demand consumer attention. Serve as sales fixtures in many trades. Built for heavy duty.

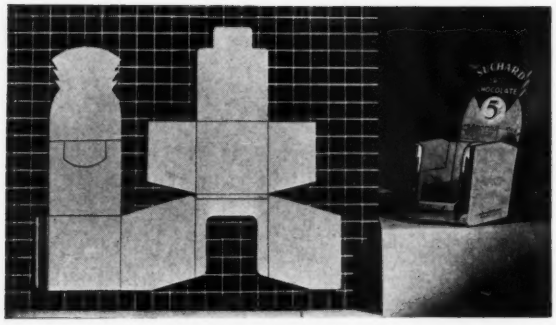
CORRUGATED SHIPPING CONTAINERS
Effective use of color display gives added advertising values at very little additional cost.

BOTTLE CARRIERS
To stimulate home consumption sales. Do double duty—carry bottles and a brilliant advertising message.

FOLDING CARTONS
Standard in construction, but definitely individual with effective color design on all sides.

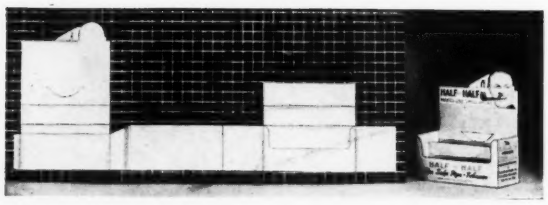
TILTED COUNTER DISPLAYS
Permit a "point-of-sale" presentation of different numbers in a line with full visibility for all.

XUM



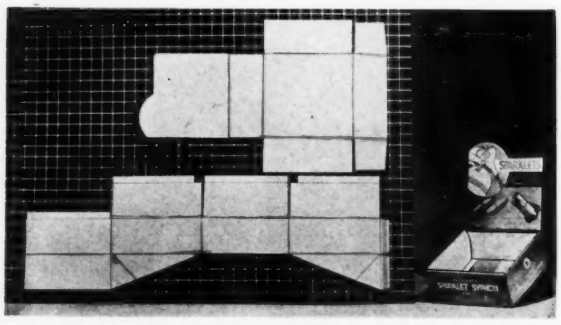
50

50. DARRAGH DISPLAY CONTAINER. The main feature of this unit is that contents, when loaded for shipment, are in an upright rectangular position, but when ready for counter displaying, they are thrown to a stacked position offering excellent visibility. On display, the contents slant backward with their front faces at right angles to the consumer's eye. Frequently used for tall products such as candy bars, wrapped candies and similar items.



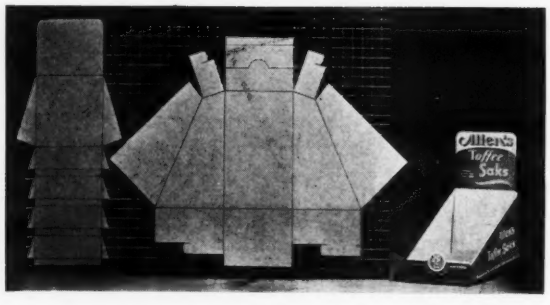
51

51. TWO-STEP DISPLAY CONTAINER. Patented display which shows products in two steps or tiers. Made in one piece, shipped flat. Easily set up by pushing down on two upright pieces which are scored to form the steps. Requires protective sleeve for shipping filled with merchandise. A simple, attractive display unit of sturdy construction and good counter stability.



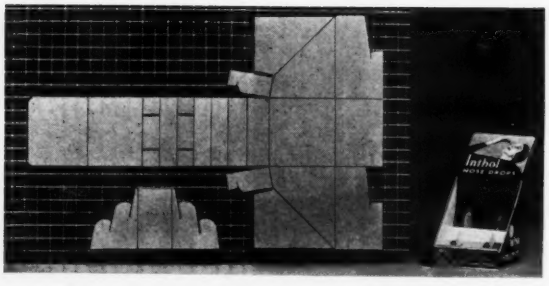
52

52. SIMPLEX DISPLAY CONTAINER. A special easel permits tilting this container at different angles, for effective display. Requires printing and coating one side only. Protective sleeve necessary for shipping. Principal feature is the simplicity with which the dealer may display the goods at an angle. Display panel is equipped with supporting flap which enables advantageous showing of the advertising message.



53

53. RHOMBOID DISPLAY CONTAINER. An effective new type of display container in which the individual packages are displayed in a staggered manner. Particularly useful for fragile items packed in glassine or transparent cellulose bags. Keeps packages in neat position while on display. This is a patented type of display container construction.

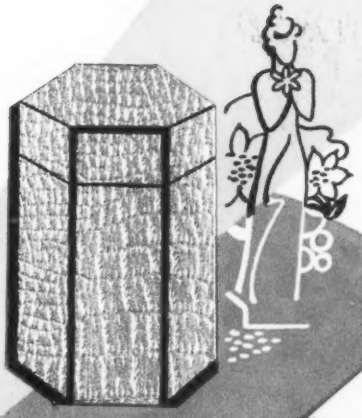


54

54. RHOMBOID TIER DISPLAY CONTAINER. A novel development, combining the stepped and tilted back arrangements. Well adapted for display of small articles. Provided with inner packing and protective cover to ship in set-up form. Note the interior dividers which prevent lateral movement of the products on display. A patented variation of the Rhomboid type of display container.

XUM

METALLIC EMBOSSED — The new lustre and smoothness of Ridgelo casein Metallics are good reasons for making these boxboards "part of the package design." Economical, too! Suggested for folders, cards, sleeves and boxes for cosmetics and pharmaceuticals. When embossed the effect is that of an expensive set-up type of box.



NO. 41 COATING — For varnish or gloss inks Ridgelo No. 41 coating gives the highest shine with true color values. Varnish, lacquer and gloss inks not only distinguish a package design, but give substantial surface protection. Recommended for cartons and display boxes for toilet articles, drugs, candy and food products.

LAMINATED BOARDS — Extra folding strength, rigidity, uniform printing surfaces are a few advantages of Ridgelo laminated to printing papers. Applicable to double wall cartons, display containers, shipping units. Useful for sporting goods, household appliances, bulky drugs and textiles.

Whether it's

CRULLERS *or* COSMETICS

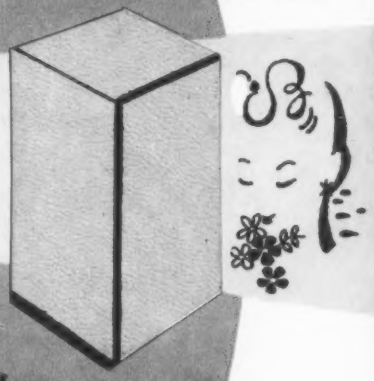
Ridgelo

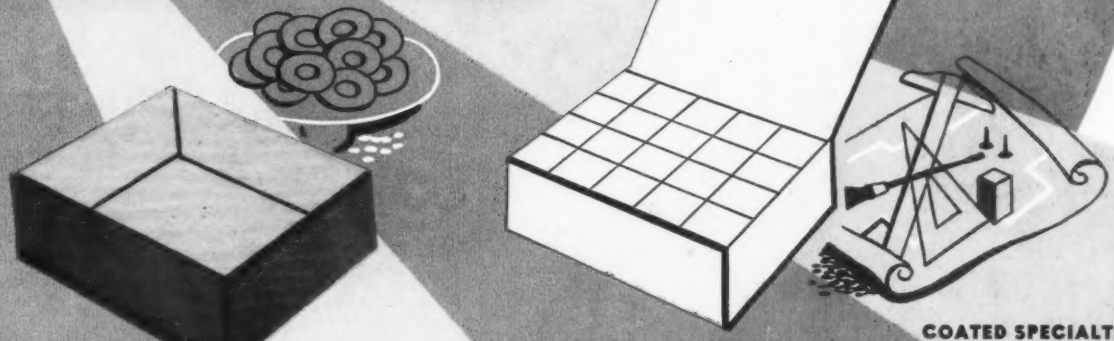
CLAY COATED

REG. U. S. PAT. OFF.

PACKAGING CAN DRAMATIZE PROTECT AND INCREASE THE SALES OF YOUR PRODUCT....

BRUSH FINISH EMBOSSED — Brightness and color fastness in any shade are found with a Ridgelo brush finish. It is a rich, lustrous coating — a natural selection for the most impressive of cosmetic packages. Varnish is unnecessary to obtain a high gloss, and embossing adds an extra quality — practical for line or type designs.





MOISTURE AND GREASE RESISTANCE — The combining of greaseproof papers, a moisture resistant adhesive and paper board is the basis for many better food and candy cartons. Not only is the package clean, but the products are preserved — thus they become saleable much longer and keep fresher.

COATED SPECIALTIES—Interesting and new is the coating of Krafts to produce smoother, more colorful surfaces for dual-purpose shipping containers. This is a specialized service sponsored by Ridgelo. It has brought wider variety, better printing, more durability to this field of packaging.

MADE AT RIDGEFIELD, N. J. BY LOWE PAPER COMPANY

Representatives: E. C. Collins, Baltimore • Bradner Smith and Company and Mac Sim Bar Paper Company, Chicago • H. B. Royce, Detroit
Gordon Murphy and Norman A. Buist, Los Angeles • A. E. Kellogg, St. Louis • Philip Rudolph & Son, Inc., Philadelphia

XUM

New Variety IN A HIGH QUALITY SERVICE *for* FOLDING CARTON MANUFACTURERS

ONE dependable source for *many* boxboard requirements is offered now through the new Ridgelo service.

Sixteen beautiful clay coated colors, all litefast • smooth, low cost metallics • combined boards • special coatings • coated bases for transparent papers • decorative finishes • useful package linings . . . are all available in the 1941 Ridgelo line.

The value of this broader service is in its assurance of high quality, for no longer is packaging a hit or miss proposition. Successful folding cartons must fill specific demands • in customer appeal, in efficient filling and production. Only through such accurate planning can cartons be made to sell merchandise in competitive markets.

It is the hope of the makers of Ridgelo to continue to serve the converting field with the most modern methods and materials available. You can specify safely and your boxmaker will use gladly . . . a Ridgelo boxboard.

Remember that every good design deserves Ridgelo clay coated . . . *all others* need it! Send us specifications and samples will be supplied gladly or made up to meet your special requirements.

MADE AT RIDGEFIELD, N. J. BY LOWE PAPER COMPANY

Representatives: E. C. Collins, Baltimore • Bradner Smith and Company and Mac Sim Bar Paper Company, Chicago • H. B. Royce, Detroit
Gordon Murphy and Norman A. Buist, Los Angeles • A. E. Kellogg, St. Louis • Philip Rudolph & Son, Inc., Philadelphia

LOOK FOR THIS TRADEMARK

and be sure you're getting a REAL SIMPLEX BOX !

Simplex paper boxes combine the attractiveness, the durability of the set-up box . . . and the economy and compactness of the folding carton ! !

These boxes are made *in one or two-piece construction to meet the needs of every manufacturer and every product ! !* Strong, handsome, easily assembled, bringing economies all along the line, they're the logical package for *your* product.

SIMPLEX boxes are precision made. Look for the Trade Mark "SIMPLEX." . . . Buy "SIMPLEX" trade marked boxes to guarantee quality.

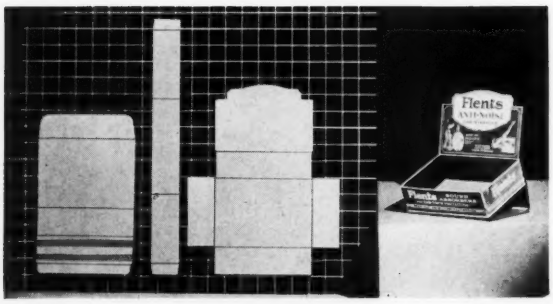
If you're bothered with a packaging problem . . . a storage problem . . . cost problem . . . Simplex boxes are your answer.

Package your product in a paper carton that efficiently meets plant and production requirements; that saves space, time and money—a box that is a silent, but effective salesman.

Your inquiries are invited.

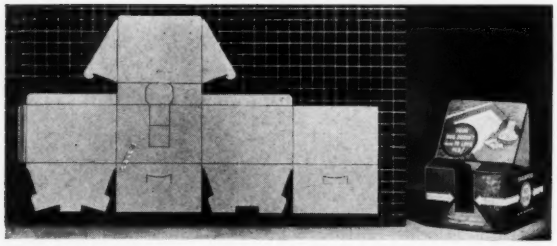
SIMPLEX PAPER BOX CORPORATION

LANCASTER, PENNSYLVANIA



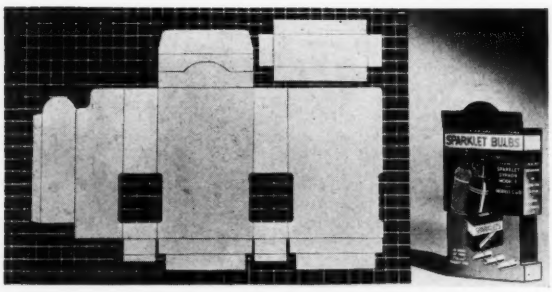
55

55. THREE-PIECE TINSLEY COUNTER DISPLAY CONTAINER. A box of patented design, so contrived that the cover, folding under, proves an easel support, to display the goods. A remarkably successful type of display box because of its simplicity of construction, its ease in setting up, and because it has sufficient strength to act as a combination carrying and display box. It is susceptible to fine printing, required on one side only. The display panel is held at the proper angle by a supporting flap. Much of the universal success of this box is due to the fact that it is easily converted from a carrier to a display container by the retailer.



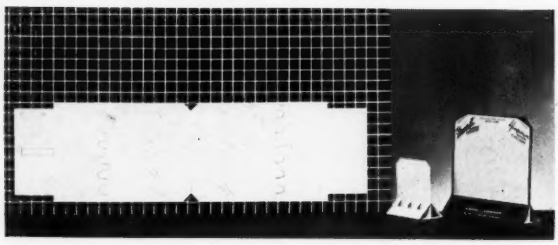
56

56. COUNTER DISPLAY DISPENSER. A novel container in which the display panel, customarily placed at the back, is placed somewhat forward, so that only a few of the articles are displayed, the greater number being behind the display panel, from which position they are dispensed. Avoids disorderly appearance of partly filled displays after a few units are sold. This device is, of course, unsuitable where mass display is the desired merchandising method.



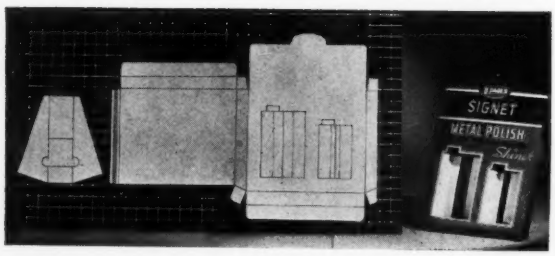
57

57. CENTER-DIVIDER DISPLAY DISPENSER. A straight tuck end carton with center divider forming two compartments. Readily filled, products falling into position with removal of bottom one. Stands erect on counter or may be hung on wall. Center divider construction a patented feature. Important considerations in planning dispensers of this type are: (a) provision of ample withdrawal opening and (b) provision against "jamming" of product in reservoir tower. Both are easily provided for with a bit of foresight.



58

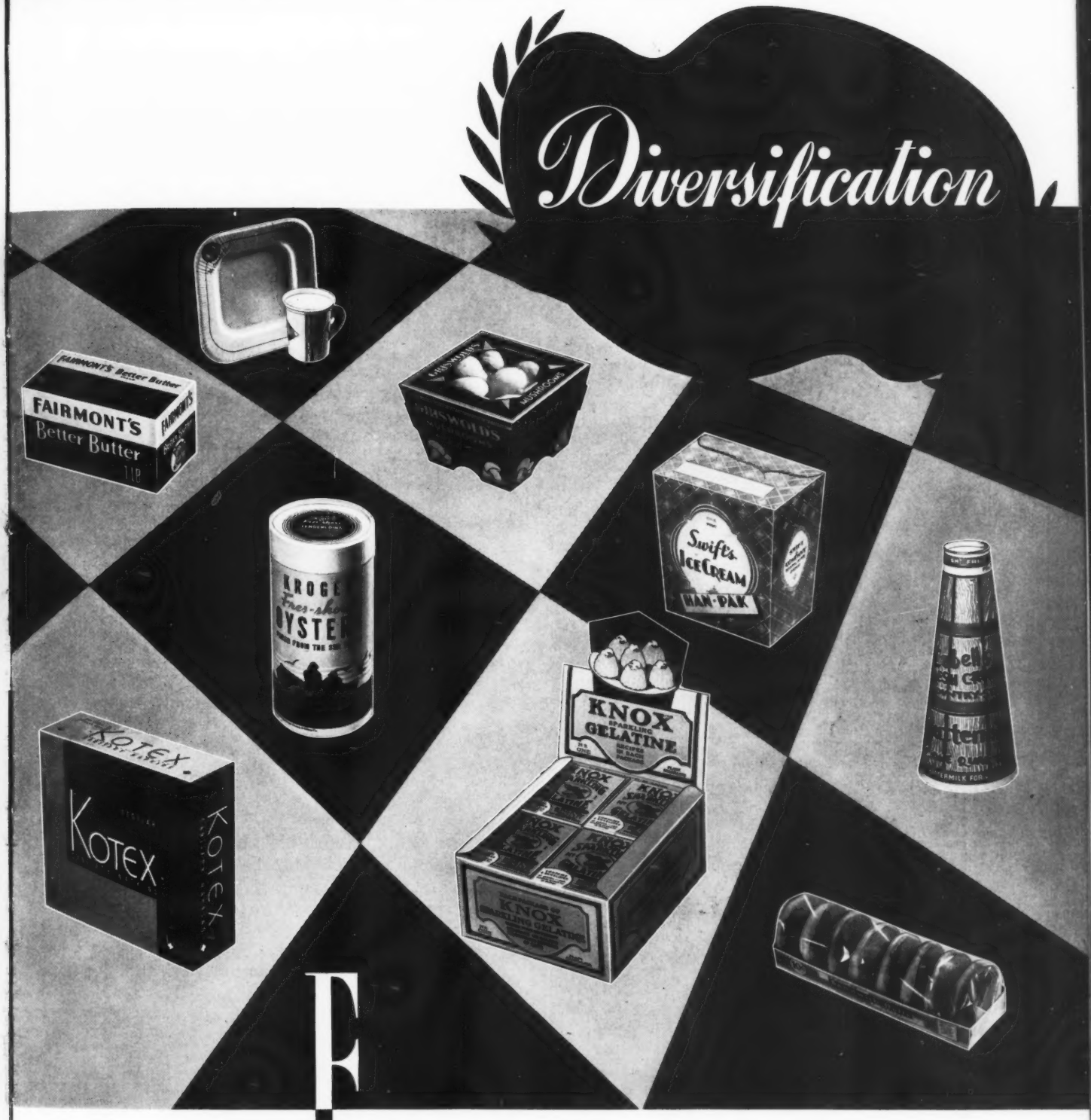
58. BROOKS AUTOMATIC DISPLAY CARD. This display card consists of a one-piece stitched blank arranged to hold 12 units (6 on each side). By pressing down on the display panel, the bottom automatically forms a base and easel for display. This eliminates the necessity of a separate easel.



59

59. MULTIPLE-PRODUCT DISPLAY CONTAINER. Effectively displays a variety of different sized products. Construction uses a reverse tuck end carton, with extended display panel, and a separate reinforced inner platform. Products rest securely on double platforms. Fitted with easel back so display sets at an angle. Die-cuts which serve as product receptacles are, of course, varied in size and shape to meet the particular needs of each display used.

Diversification



FOLDING CARTONS for dry products . . . paraffin treated cartons . . . moistureproof-greaseproof packages . . . paper bottles . . . cans . . . pails . . . cups . . . trays . . . plates . . . transparent window packages . . . display cartons . . . all go to make up the limitless variety of paper packages produced by Sutherland.

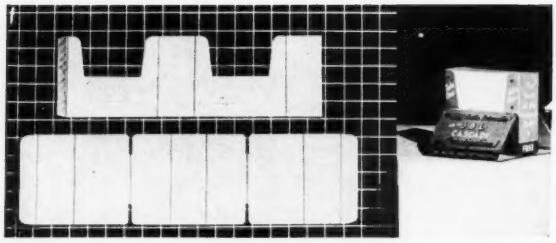
Such a diversification of packages makes it possible to handle a vast multitude of packaging needs and to solve countless packaging problems.

Consult Sutherland about your packaging requirements for intelligent recommendations concerning shape, style, size, surface design, and package materials that will give your product adequate protection. No obligation, of course.

SUTHERLAND PAPER COMPANY

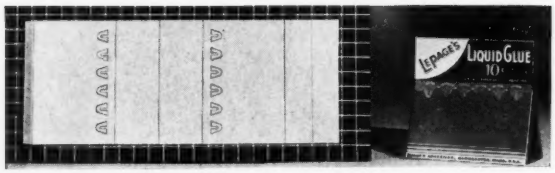
. . . . Kalamazoo . Michigan . . . .

XUM



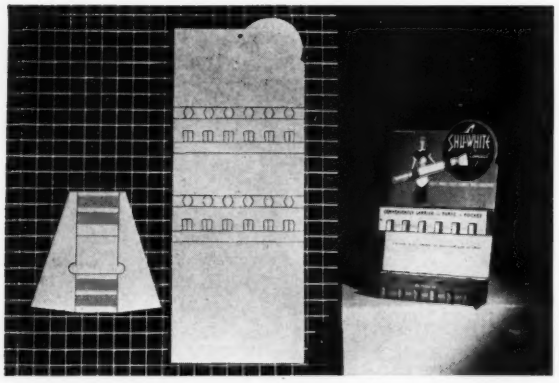
60

60. FREE PAMPHLET DISPENSER. This construction is easily set up on the dealer's counter ready to serve as a dispenser of pamphlets, advertising media or similar material. Its two-piece construction, simple and unique, is extremely inexpensive and provides an economical means of shipping and distributing free literature. Note that the unit "faces both ways"—permitting use on island counters.



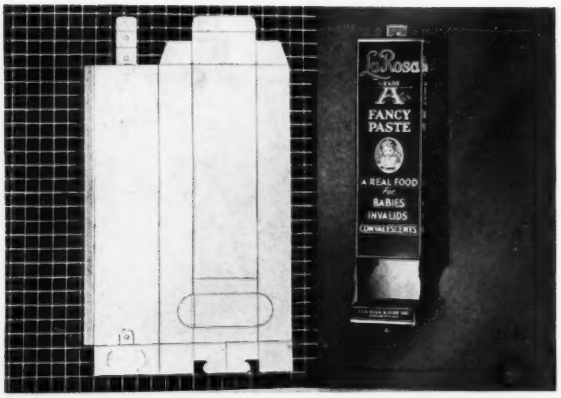
61

61. MULTIPLE UNIT DISPLAY CARD. This economical display card holds twelve tubes suspended from die-cut tabs. Six units are on display with a reserve stock of six tubes on the back panel. The design repeats so that display can be reversed when front half of goods is sold. This card requires no separate easel but can be folded to ship flat.



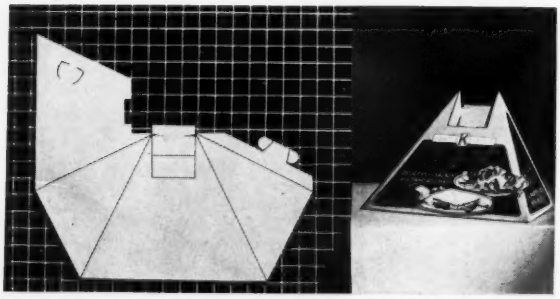
62

62. MULTIPLE UNIT DISPLAY CARD. This card holds twelve individual units, each in its own compartment. It can be used as a counter or wall hang-up card. A separate attached easel is required when used as a counter card. For shipping, this unit requires special interior packing. Almost innumerable variations of this general type are possible, to meet special requirements of the products to be displayed.



63

63. HANGER DISPENSER. This high, narrow dispenser holds a single row of packages, piled one on top of another, with an opening at the bottom through which they are easily withdrawn. Occupies minimum space on crowded drug store counters or may be hung on the wall or other available space. Note top and bottom hanger tabs, provided as an integral portion of the display carton blank.



64

64. ONE PACKAGE DISPLAY STAND. A popular, effective and highly economical method of getting one package displayed on the counter. May be made to fit in corrugated container with products so dealer cannot overlook it. Cut-out on panel can be made to hold various shaped products. Although this unit ships flat and, hence, requires minimum shipping space, its erection is so simple that a relatively high proportion of displays can be expected to find their positions on desirable counters.

The Supreme Court of the nation, when it comes to packaging problems, is the American home. The supreme judge of this high tribunal is the American housewife. Upon her decision rest the purchases of millions of American products.

In the designing of every Sefton product this important sales motive is duly considered. "What will a woman think of this?... can it be opened easily?... does it protect the contents of the package?... does it have eye appeal?"... are questions constantly asked by Sefton designers. We shall welcome an opportunity to work with you on your next packaging problem. There's no obligation. Write us.

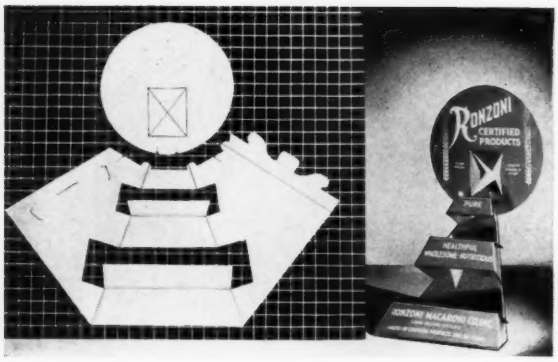
EASY TO OPEN
Simply pull string and rip package all around.
Press slightly with thumbs to complete break and pull ends apart.

SEFTON FIBRE CAN COMPANY

Plants — St. Louis, Missouri • New Iberia, Louisiana

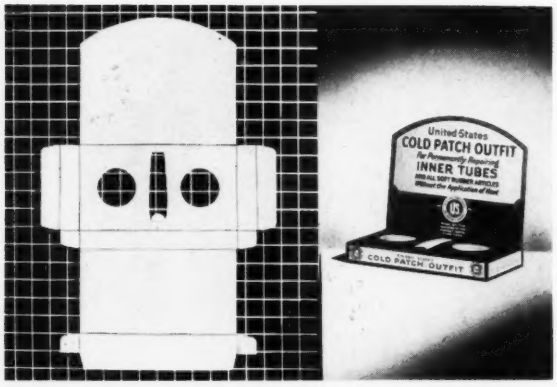
DISTRICT OFFICES: Los Angeles San Francisco Denver Tampa Chicago Des Moines
New Orleans Boston Detroit Kansas City St. Paul Omaha New York Cincinnati Cleveland
Oklahoma City Pittsburgh Memphis Nashville Dallas Houston Salt Lake City Seattle

XUM



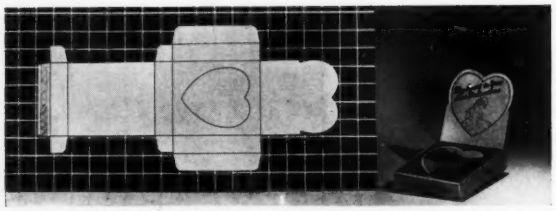
65

65. TWO-PIECE DISPLAY STAND with separate card. Similar to No. 57 except that it is made to display a number of products in a family group. By the novel structure, the necessity of hand-applied easels is eliminated. Slightly more complex in form than the type shown above. Note the use of triple locks to achieve necessary strength.



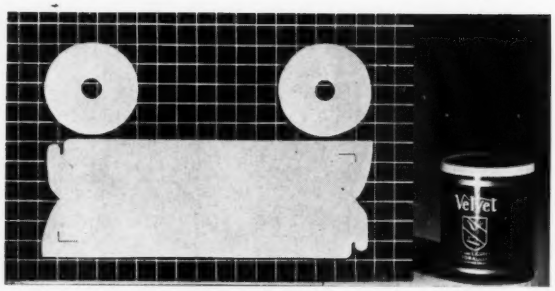
66

66. FIVE-PANEL COUNTER DISPLAY CONTAINER. This style has replaced the old type of five-panel carton which requires printing two sides and coating two sides, primarily used for introduction and sampling of new products. To set up this display, it is only necessary to insert the end tucks. Note that the four lower panels (in diagram) form a carton in themselves, the fifth panel, or tail, forming the display background.



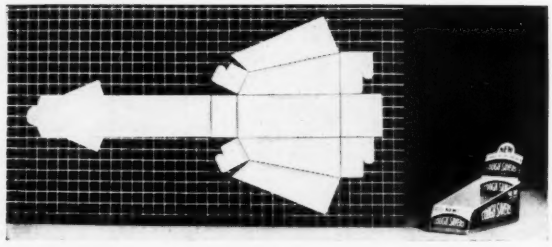
67

67. FIVE-PANEL COUNTER DISPLAY. Same general style as No. 59 except that it has been made to serve as a display shipper and carry-home unit. As a carry-unit the display panel folds down over the die-cut carton face to provide an effective closure. If desired, this panel could be so designed as to incorporate locking tabs for added strength.



68

68. DUMMY DISPLAY CARTONS. Display units of this nature are widely used by tobacco manufacturers for dealer window displays. Shipped flat and readily set up by dealer, they save tying up salable merchandise in displays and possible spoilage due to exposure to sun and dust. Available for other products. Patented.

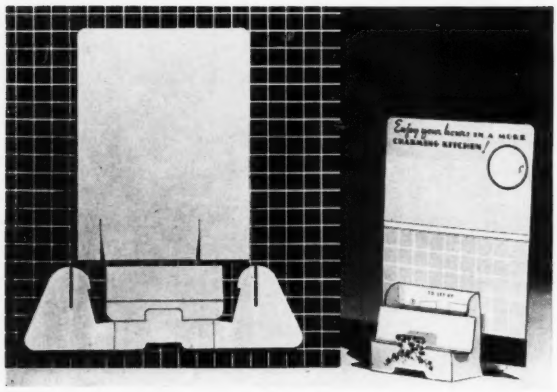


69

69. RHOMBOID DISPLAY CONTAINER. Another variation of this type. An effective display container in which the individual contents are packed in a staggered manner for better display. Particularly useful for fragile packages put out in glassine bags. Comes to dealer ready to set up and the contents are kept in tidy position while on the display counters. Patented.

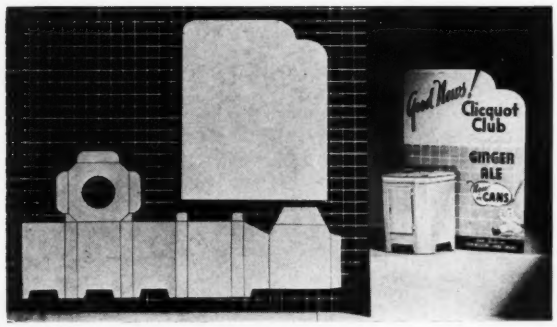
PILLIOD
The Aristocrat in the Field of Distinctive Packages and Displays.
Come to us with your problems and let our creative department solve them for you.
THE PILLIOD CABINET COMPANY • SWANTON, OHIO

XUM



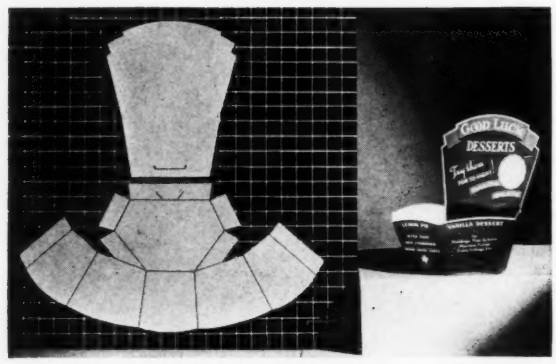
70

70. INDIVIDUAL DISPLAY STAND AND CARD. An inexpensive, effective, two-piece unit which raises the product above the level of the counter and gives close tie-up with the advertising method. By interlocking the stand portion with the display card, a rigid easel support has been formed to hold the product and card in an upright position. Some users design the card so that it may be re-used by the dealer as a unit by itself after the display has served its function.



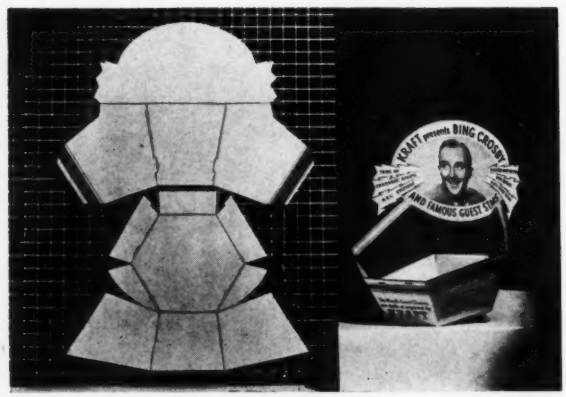
71

71. PLATFORM STAND AND CARD. Designed to project into consumer consciousness the original offering of ginger ale in cans. The actual can, in place on the refrigerator in the assembled unit, covers the empty space below "Good News!" and provides, in the manner shown in the illustration, a focal point for copy concentration. Considerations of economy dictated the simplest possible structure (commensurate with three dimensional effect). Innumerable variations of this platform type of design are, of course, possible.



72

72. BASKET DISPLAY CONTAINER. A container designed primarily for aisle table and counter display of small packages of quick-sale type, such as gelatine desserts. Does not serve as shipper but is easy to set up, displaying goods in studied disorder, thus encouraging self-service without disturbing unity of display. An extremely effective type of mass display widely used in the drug and grocery fields.

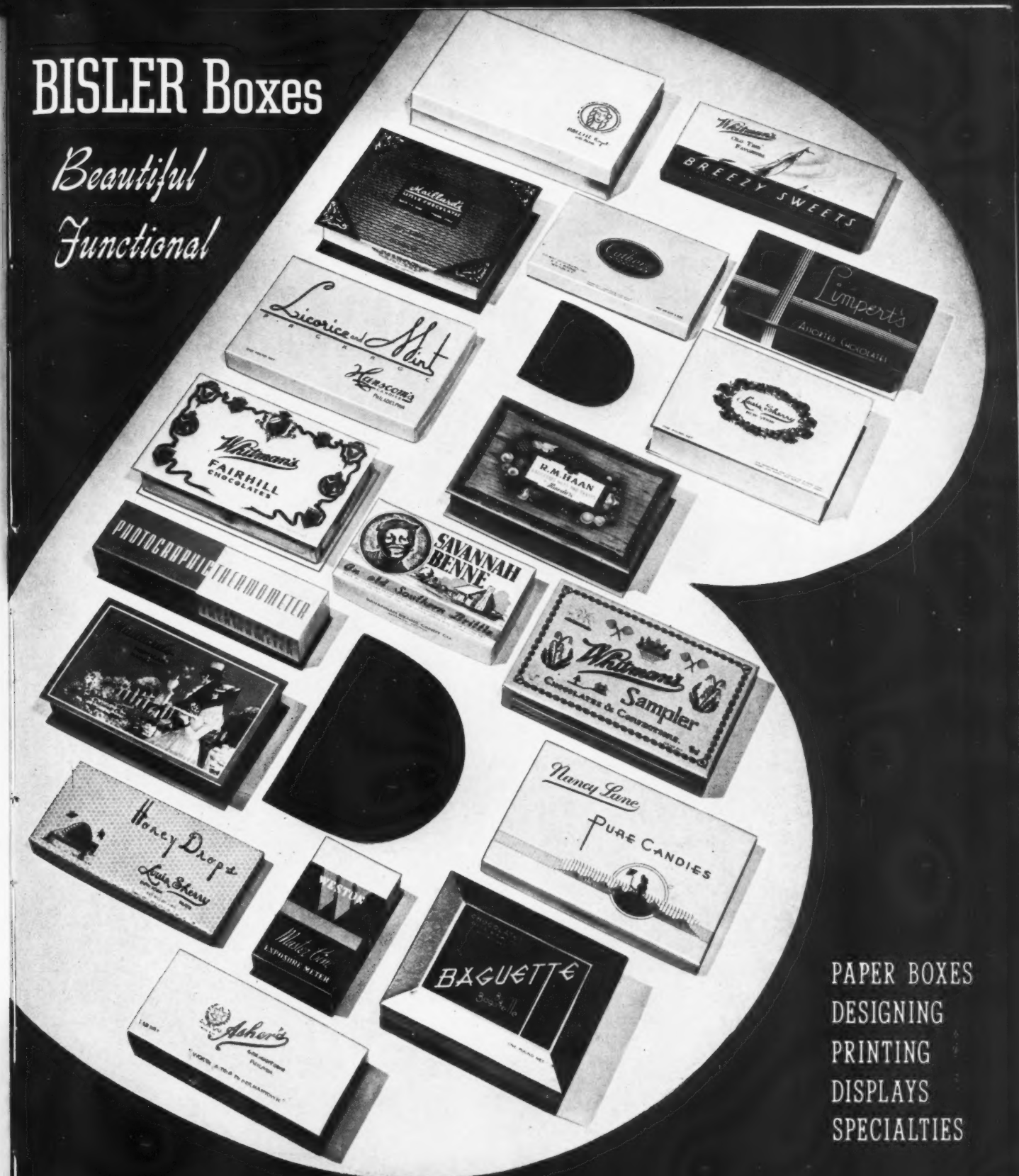


73

73. BASKET DISPLAY CONTAINER. Similar to No. 59 except for general shape of basket portion and display panel. The display panel has been creased so that it can be folded to fit a shipping case. This does not interfere with the rigidity of the panel when on display as the panel is forced into a curved position.

BISLER Boxes

Beautiful

Functional

PAPER BOXES
DESIGNING
PRINTING
DISPLAYS
SPECIALTIES

G. A. BISLER, Inc.

MORE THAN BOXMAKERS

FIFTH AND BROWN STS., PHILADELPHIA, PA. · 55 WEST 42nd ST., NEW YORK CITY

BISLER BOXES BRING BUSINESS!

XUM

with assured sales success—in a SMITHCRAFTED container

We have successfully "gift-packaged" endless and widely different products,—the lovely Orchid Hosiery Chest to the right being but one of many of the apparel field;—the round metal plastic-like ornamented container for fruit cake, in the food products field;—and the rich, tooled-leather-like cigarette chest, at right bottom, is but one of several packages created for tobacco people.

Baked beans, golf balls, hats, cosmetics, towels—all of the illustrations herein being of 1940 jobs actually produced (not just samples) for those products—many of them in quantities well in excess of 100,000,—but whether 100,000 or just 1,000—and no matter what your product—you will find it worth while investigating "gift packaging" possibilities with Smithcrafted "designed to fit" containers. We invite your inquiry.

THE S. K. SMITH COMPANY

2857 N. WESTERN AVENUE **CHICAGO, ILL.**

New York Office, 52 Vanderbilt Ave., MUrray Hill 9-8290

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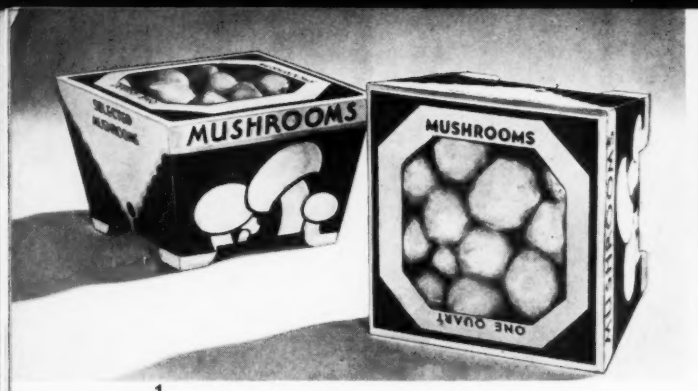

1

2

1. Paraffin-treated cartons for mushrooms. Equipped with transparent cellulose window patch. Courtesy Sutherland Paper Co. **2.** Carton of printed transparent sheet laminated over die-cut blank, permitting view of inner bag. Photo courtesy Shellmar Products Co.

Specially Processed Cartons

To meet varied special needs, cartonboard manufacturers and carton makers have developed a wide range of special processes designed to provide either unusual appearance effects or protection factors for the folding carton. Thus boards are available which will give varied degrees of resistance against moisture-vapor-transmission, grease staining, grease leakage, rancidity, scuffing, etc. Special processes have been developed to provide highly attractive outside laminations or coatings to cartons to afford partial transparency to the carton without the use of patched-on windows and to resist surface abrasion and contamination of the product by lint, ink odors, etc.

Paraffined and Waxed Carton

Paraffined- or wax-coated boards and paraffin-saturated boards have been widely used to provide resistance against moisture penetration from the outside or moisture loss from the inside of the carton. Their widest fields of adaptation have been for butter, lard, shortening and ice cream cartons and in the frozen food field.

The paraffin or wax may be applied, before carton fabrication, to the cartonboard itself as a coating or impregnation. On other cartons, procedure is to first print and die-cut the carton blank, after which it is passed through a bath of hot paraffin, followed quickly by immersion in frigid water which "sets" or hardens the paraffin coating and gives a high gloss. For such hot coated cartons, single or double bleached sulphite (either solid or manila liner) are usually utilized.

On ice cream and other cartons where imprints must be applied during some stage in the carton's preparation prior to sale, waxless panels are sometimes provided. Thus firm name, brand and artificial flavor information can be applied when necessary.

Laminated Cartons

Lamination is a term most commonly used in the packaging field to describe combinations of transparent sheet material with opaque material. However, technically, the term applies to any process whereby two or more sheets or paperboard are combined by adhesive.

For carton manufacture, a very wide range of laminated boards is available. Thus glassine, vegetable parchment or grease-proof papers may be affixed to a folding boxboard to give the composite board the surface characteristics of these papers. Bond, sulphite or other papers with good printing qualities may be laminated to folding boxboard to provide a good outside printing surface plus structural strength. Normally, this surface would be obtained through the control of the top-liner mixture furnished to the paperboard machine, but there

Cross References: Boxboards: Types and Selection, page 32; Folding and Display Cartons, page 35; Paper Containers for Liquids, page 90; Protective Materials—General Considerations, page 177; Laminating and Combining, page 193.

3

4

3. Die-cut carton formed of grease-proof paper laminated to cartonboard with moisture-proof adhesive. Transparent cellulose window completes enclosure. Courtesy The Menasha Products Co. **4.** Carton of laminated foil. Aluminum foil inside liner and printed foil outside liner. Courtesy Reynolds Metals Co., Inc.

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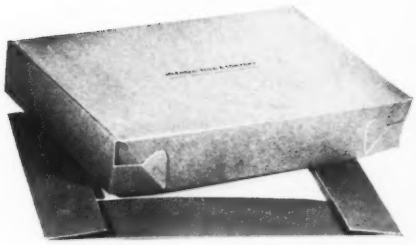
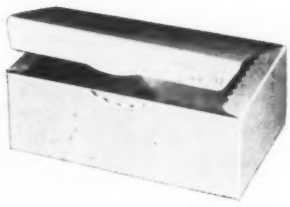
Consult

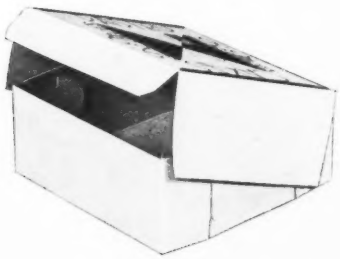
MORRIS

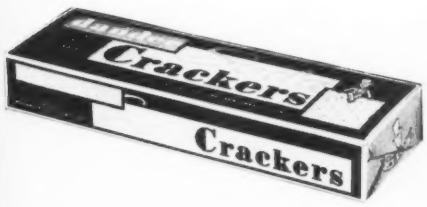
PAPER MILLS

for practical packages of all types









- FOLDING CARTONS
- CRACKER CADDIES
- SUIT BOXES
- LAUNDRY BOXES
- HAT BOXES
- CAKE BOXES
- SAUSAGE BOXES
- MORRIS LOCKTOP PAPER CANS FOR BULK ICE CREAM
- COUNTER DISPLAY BOXES FOR EVERY PURPOSE

MILLS & FACTORY
MORRIS, ILLINOIS

SALES OFFICE
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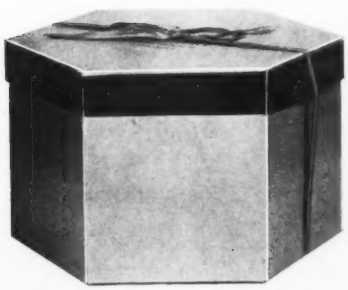

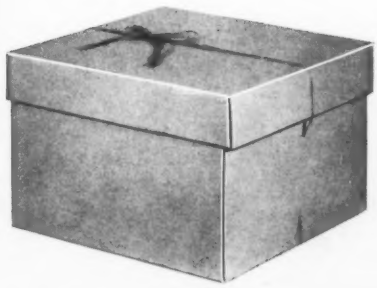

XUM

are cases where it is more economical or otherwise desirable to obtain the printing surface through lamination.

Transparent Film Lamination

Printed or unprinted transparent sheet material can be laminated to carton stocks to provide any of a number of advantages. The outer transparent film provides a glossy, attractive surface, resistant against scratching and dirt and dust markings. The printing may be applied to the underside of the film or to the cartonboard prior to lamination. By either method, the inks are effectively isolated from the outer surface and thus made completely resistant against scuffing and scratching. By laminating over die-cut board, it is possible to secure the additional advantage of transparent windows, without the relative weakness inherent in a "patched" window and with the other advantages of transparent film lamination. Transparent film lamination provides additional advantages in terms of retention of product moisture or protection from moisture absorption, grease resistance, insulation, etc.

5. Paraffin-coated carton for erection immediately prior to filling in dairy plant. Courtesy The Gardner-Richardson Co. **6.** Paraffined butter cartons. Courtesy The Butler Paper Products Co. **7.** Butter and ice cream cartons of paraffined multi-color printed board. Courtesy Container Corp. of America.

5

Silicating

By treating the inner side or bottom liner of a folding boxboard with sodium silicate, a smooth finish is imparted. This process is sometimes utilized to prevent scuffing of the folding boxboard, to avoid transfer of lint or fuzz from its surface to the product and to attain a degree of moisture resistance.

Asphalting

Asphalt is used (in laminated boards) because of its moisture-resistant qualities. Because of its color, it is not applied to the outer surfaces of the board. It is used as a layer through the inside of the sheet. Sometimes it is introduced at the wet end of the board-making machine and, on other occasions, it is used as an adhesive combining two finished sheets.

Metallic Coated Boards

Foils are frequently laminated to cartonboard to secure exterior decorative effects. Such cartons can, of course, take all the variations of printing and embossing to which foils are susceptible.

A new type of combination foil board consists of two outer layers of aluminum foil bonded to a central paperboard layer by latex adhesives. Cartons made of this board, it is claimed, can be sealed to form a sift-proof container requiring neither inner liner nor outer wrap. Hot melt adhesives can be used with special equipment or specially formulated adhesives with standard sealing machines.

Trade Marked and Water Marked Boards

Boards are available with markings forming an integral part of the liner which will form the inner faces of the carton. Such markings may reproduce trade names, trade marks or other devices intended to prevent counterfeiting or substitution of products.

6

7

XUM

SET-UP BOXES · TOPS IN BOTH FIELDS · FIBRE CANS

Modern fibre cans with new design and construction features. All shapes—SQUARE, OBLONG and ROUND in a complete range, from the smallest consumer size to the largest institutional size. Your label, applied in our manufacturing process, becomes an integral part of the can. · Set-up paper boxes for your product offered in unlimited styles as a sales booster. · Avail yourself of our designing and modern production facilities.

SHOUP-OWENS, INC.

1100 ADAMS STREET · HOBOKEN, NEW JERSEY

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1

2

1. A group of boxes of varied styles and constructions erected with metal edge staying immediately prior to filling at the packaging plant. Photo courtesy National Metal Edge Box Co. **2.** Staples used to seal folding cartons against tampering or to strengthen box bottom for weight carrying. Transparent combination box lid utilizes staples to secure attachment between rigid transparent sheet and boxboard. Covering paper has been drawn back to disclose staple. Photo courtesy Bostitch, Inc.

Stayed and Stapled Cartons

Intermediate between the set-up box and the folding carton is the stayed or stapled type which is formed of a folding blank, usually pre-printed. These types are delivered to the user die-cut and scored. As finished boxes are required, the flats are taken from stock and erected, usually at a convenient point on the assembly line.

In a number of industries, wire stapling machines are utilized to permanently erect stapled cartons. This practice is particularly common in the hardware industries and wherever packages are designed primarily for storage use by dealers. But in recent years, it has extended to other fields as well and quite a substantial number of packages are now on the market, utilizing staples as a means of holding a carton blank in erect position. The procedure is often used for two-piece telescoping boxes.

Staples are used as a sealing medium in an increasing number of instances where it is desired to prevent tampering with carton contents. They are also used to seal the bottoms of cartons carrying fairly heavy products as an alternative to the use of locking tucks. In set-up box work, staples are sometimes used instead of adhesive to secure attachment between transparent rigid materials and set-up boxboard. In such instances, the stapled seal is usually overlaid with decorative paper so that the staples themselves do not show.

Cross References: Boxboards: Types and Selection, page 32; Folding and Display Cartons, page 35; Specially Processed Cartons, page 68; Transparent Combination Boxes, page 86; Rigid Transparent Containers, page 104; Box and Bag Stapling Equipment, page 446; Wire Stitching Containers, page 524.

The metal edge type of box uses a patented metal stay which is cut from a reel by machine at the moment of application. The operator merely holds the blank in proper position on the anvil of the staying machine and controls the staying mechanism by foot pedal. An entire box can thus be assembled in a few seconds.

In some instances, the staying machine, or machines are located alongside assembly and packing tables, thus making the whole packaging procedure a part of the production line. Other firms maintain separate assembling departments in which boxes of a number of types and sizes are assembled for hour-to-hour needs.

Boards used in metal edged boxes are available in a number of colors, weights and finishes. Practically every type of decoration may be utilized. Stay material is available in a number of widths and in colors to harmonize or contrast with the board. Stay metal is delivered in reels and automatically cut to the required length by the staying machine.

Among the advantages claimed for stayed or stapled cartons is a very substantial reduction in space required for storage (when the alternative type of container is of set-up or pre-formed construction). Production of boxes is more directly related to other factory production schedules and thus the box user is free from some of the hazards involved in a reliance upon outside sources, provided that an adequate stock of blanks is maintained.

Metal edge boxes are very frequently used as sample mailers and as mailers for small and fragile articles, where the metal stay provides a high degree of rigidity to resist shipping shocks. They can be provided with tamper-proof locking tabs to secure lowest mailing rates.

XUM

Snappier

• more accurate • more appealing
BECAUSE THEY'RE PRECISION-ENGINEERED

SNAPPIER appearance on the shelf, smoother performance in the filling machines—you can depend on these qualities in Gardner-Richardson folding cartons because they are made to more exacting standards.

The board is engineered to print, fold and seal with greater uniformity. Cutting and creasing dies are made with a closer tolerance. Inks are brighter, more dependable because they're scientifically formulated. Make-ready and presswork are more closely supervised. As a result of these *precision-engineered* standards, Gardner-Richardson is able to mass-produce cartons with an *extra* plus that means *extra* sales and *extra* savings for you.

ENGINEERED-PRECISION. Nothing is left to guesswork or chance in the two great Gardner-Richardson plants. From the pulp in the beaters to the finished cartons, science is on the watch.

Write for samples. Let us quote on your requirements

The GARDNER-RICHARDSON Co.

Manufacturers of Folding Cartons and Boxboard

MIDDLETOWN, OHIO

GARDNER-RICHARDSON — FROM PULP TO FINISHED PRODUCT — ENGINEERED PRECISION

***THIS SYMBOL** is your assurance of greater uniformity, higher quality, better appearance, better product protection—profit and satisfaction.*

Sales Representatives in Principal Cities: PHILADELPHIA • CLEVELAND • CHICAGO • ST. LOUIS • NEW YORK • BOSTON • PITTSBURGH • DETROIT

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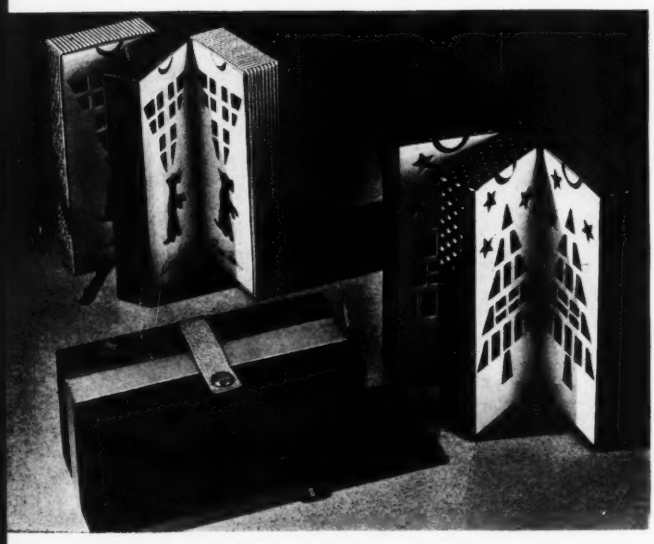
Set-Up Paper Covered Boxes



1

The term "set-up," when applied to a box, means that it is a completely finished box—produced and delivered in three-dimensional form—when it leaves the plant of the paper box manufacturer. It is ready to be packed with merchandise and is ready for warehousing or shipment immediately after being packed. It is manufactured from materials peculiarly produced for use in its construction. Basically, it is made from boxboard which is rigid in form, so that the completed box, when covered with one of the myriad of specially designed wraps, creates the illusion of permanence.

When the set-up box is delivered by the box manufacturer to the packager, no further processing is required. This is an important factor because it means the saving of time, and permits rapidity of handling by the packager with consequent savings of cost.

1. Double-hinged three-piece boxes, folding bookwise to compact shapes. **2.** Candy boxes with extension base and lid and full-telescoping side walls. Foil paper by Hampden Glazed Paper & Card Co. **3.** Two-piece hinged top. Opens to display dress accessories. **4.** Extension edge candy boxes with raised lids. Lace print papers and flint edgings by Hampden Glazed Paper & Card Co. **5.** Sturdy full-telescoping boxes for heavy electrodes.

Cross References: Merchandising Considerations, page 11; Production Considerations, page 13; The Food, Drug and Cosmetic Act, page 20; Boxboards: Types and Selection, page 32; Transparent Combination Boxes, page 86; Permanent and Re-Use Boxes, page 94; Fancy Boxmaking Papers, page 160; Decorative Foils, page 162; Leatherette and Fabric Materials, page 173; Decorative Ribbons and Ties, page 174; Printed and Lithographed Labels, page 300; Embossed Seals, page 310; Set-Up Boxmaking Machinery, page 466; Types and Functions of Adhesives, page 474.

2

3

4

5

NATIONAL FOLDING BOX COMPANY

New Haven · Connecticut

1891 - 1941

NATIONAL CELEBRATES ITS 50th BIRTHDAY

The small group of forward-looking men who established this business,* in 1891, envisioned tremendous possibilities in the packaging field and determined that by the liberal application of skill, experience and honest effort enduring success could be achieved.

In those days city homes had gas lights, the chief mode of travel was still the horse and carriage, and an orange was a rare prize. Packaged foods were virtually a curiosity and practically all canning was done in the home. Hard roads didn't exist and there were neither automobiles, radios or motion pictures to intrude into the home in and around which all family life revolved.

National is glad to have lived through these significant years, to have seen the vast improvement in educational and living standards, and to have had some small part in bringing more and better things with which to live to an ever increasing proportion of our population.

To all of those who have had a part in making the name NATIONAL synonymous with quality and progress in packaging we extend our sincere thanks, and we pledge that the same constructive principles which have helped make this company what it is will be relentlessly adhered to in the days to come.

*COMPANIES FORMING THE NATIONAL FOLDING BOX COMPANY

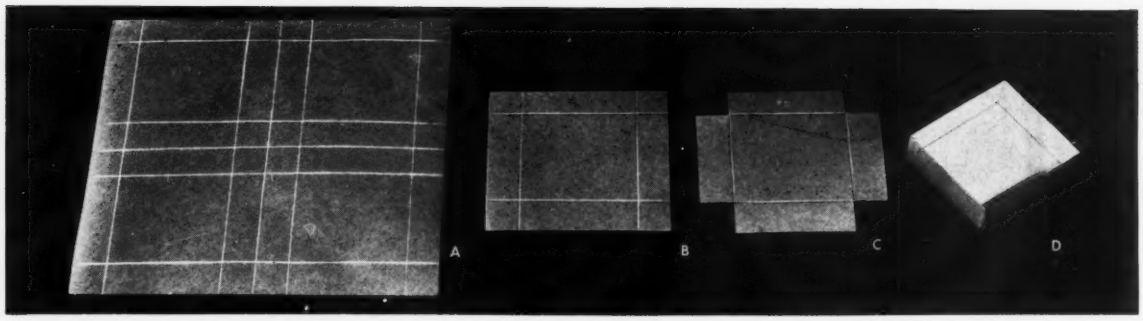
Cornell & Shelton, Derby, Conn. Est. 1860
Munson Company, New Haven. Est. 1875
Benton & Company, New Haven. Est. 1881.
D. S. Walton Company, New York. Est. 1881
Whiting Box Company, New York
J. S. Nugent Co., Brooklyn. Est. 1880
Chicopee Patent Box Co., Springfield, Mass.
Arnold Mill, Ballston Spa, N. Y.

BOSTON
143 NEWBURY STREET

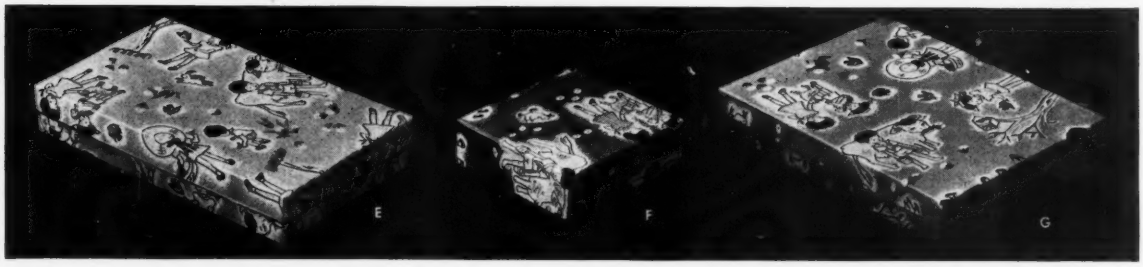
NEW YORK
CHRYSLER BUILDING

PHILADELPHIA
1201 CHESTNUT STREET

XUM



A. A sheet of boxboard is first scored to the size specified. **B.** The scored sheet is then broken into individual box blanks. **C.** These are corner cut. **D.** Next, they are turned down and corner stayed. The lid is processed similarly.



E. Together they form the simplest type of set-up paper box, known as a "skeleton" box or "rough carton" with shallow lid. **F.** Next comes the full-telescope lid by simply increasing its depth to that of the base. **G.** For greater strength, ease in opening or smarter appearance, comes the shoulder style by adding an extra base or by inserting board scored to form an inner shoulder or neck. Photos courtesy Shoup-Owens, Inc.

Descriptions and Terminology

The terms used in the following description are the standard terminology as developed by the National Paper Box Manufacturers Assn.

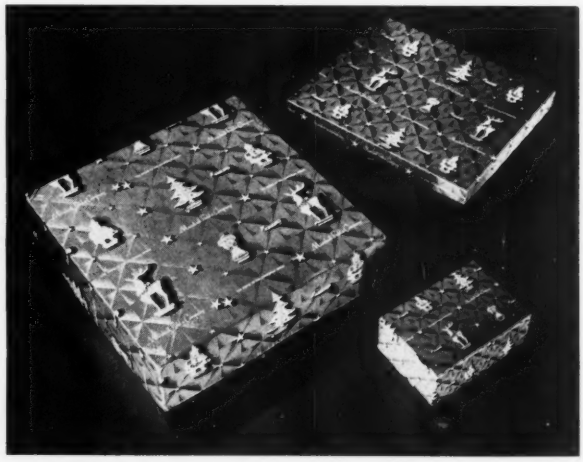
In the vast majority of cases the commodities for which set-up paper boxes are constructed are longer and wider than their depth. Automatic set-up paper box machinery has, therefore, been constructed for volume production based upon these factors.

In standard practice, all measurements are given in the following order: (1) length, (2) width and (3) depth of the box.

These three measurements are generally considered as inside base dimensions and set-up boxes are always built from them. The lid-depth measurement comes next, its length and width being determined by the thickness of board used in the base and by the fit desired, whether tight, medium or loose.

Square and hexagonal powder boxes with cut-away tops and hidden platform to hold premium perfume containers.

Full-telescoping boxes, used by Marshall Field & Co., covered with lithographed papers reproducing designs photographically.



HOW TO WORK MIRACLES in FOLDING CARTONS

It's amazing what United Paperboard Company can do with a bit of carton board. It might be the suit box with an ingeniously inserted handle which also locks the container while being carried. It might be the strong, colorful bottle carrier designed for quick, efficient loading. (Both illustrated.)

It might be the beautiful cellulosic-sheet-laminated hosiery box you see in the picture. (Our laminated packages are called "Doplexed" boxes.) Or perhaps a window carton. A die cut display carton. Or maybe all you want is an "ordinary" job: a cleanly printed, accurately cut, sturdy carton that will protect and sell your product.

Our three board mills make the board to our exacting specifications and box plants are available for fabrication. We do our own color printing, of course.

This advertisement laminated by the Dobeckmun Company, Cleveland, Ohio

UNITED PAPERBOARD CO.

XUM

Experience • Talent • Resources

WE HAVE the experience, talent and modern manufacturing resources for developing infinitely better folding cartons and display containers. For successive years our creations have been awarded **top honors** in major packaging competitions; but beyond that they have sold more merchandise!

•

Call or write us—we can be of value to you whatever your carton problem might be.

ACE CARTON CORPORATION
Creators
CICERO ILL

ACE CARTON CORPORATION

CREATORS OF FOLDING PAPER CARTONS, FOLDING DISPLAYS AND DISPLAY CONTAINERS
2538 SOUTH 50TH AVENUE • CHICAGO, ILLINOIS

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From this elementary form, a great variety of set-up box shapes can be made, suggestions of which are illustrated and described in the following:

Basic Construction (Special Cases)

Packagers sometimes require set-up paper boxes in depths greater than standard machinery will provide. For such there is special equipment in use which makes for economy in production and materials.

Thus, in a box for commodities such as millinery or bulk candy, *ended*-box construction is used. Here the saving of board more than offsets the increased labor cost of slower production.

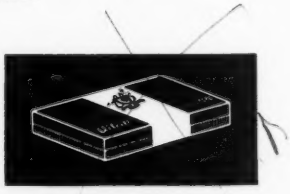
This box may be *rough*, but is generally *banded* by carrying the paper around the four sides and *turning in* at the top edge and *turning over* onto the bottom. Better quality boxes are *bottomed*, which means gluing a rectangular piece of paper onto the bottom.

Certain products, such as toilet preparations, etc., are best suited to round containers wherein oftentimes the depth is a larger dimension than either the length or the width. Special automatic machinery has been developed for this type of construction.

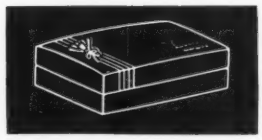
In both of these special cases the basic construction is the same as that of the original set-up box.

Unlimited variety in the designs of set-up paper boxes can be accomplished by the addition of covering papers and by combinations of shapes and accessories.

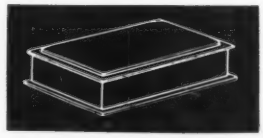
Illustrated below and on the following pages are a number of familiar variants of the basic set-up box constructions. These are presented for the use of manufacturers and designers, to demonstrate the broad possibilities for variation in the set-up box field. They should not be followed slavishly, but should, rather, be considered as a source of ideas to be adapted to the requirements of the individual situation. Manufacturers and designers will do well to consult with the boxmaker on all proposed designs, both as to practicality of construction and as to cost. By such advance consideration of these particular factors, much later expense and labor can be eliminated.



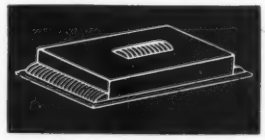
1. A regular two-piece box, telescope lid, applied design printed in two colors to give shoulder-style effect; adaptable to almost any commodity.



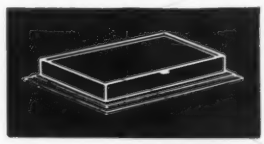
2. Shoulder-type box, made of high-quality materials, top domed for added appeal, lid hinged to base; commonly used for packaging high-priced confections, cosmetics and similar products.



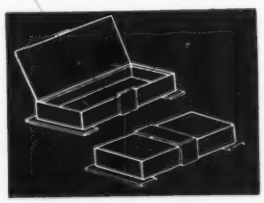
3. The well-known candy box, extension base and lid; full telescope, base and lid solid wrapped with fancy paper, foil, velour or similar materials.



4. A flat extension base with regular solid wrapped lid. Lid hinged to base at back flange of cover. Base elongated in length, augmented by quarter-round plastics at ends of base extension and segment of plastic at top center of lid.



5. Base has graduated extensions, with a flat-hinged lid recessed into base onto an inner shoulder. A small lid-pull, generally of ribbon, for ease in opening. A smartly tailored box of high quality with very flexible adaptation.



6. An adaptation of No. 5. The base extension, as well as the panels at the front of base and at the center of the lid, are of heavy board covered with paper. Contrasting color scheme gives a most sophisticated container. Again adaptable to goods where a dash of swank can augment the total effectiveness.

Smart New FIBRE *and* TRANSPARENT Packages

1. SPARKLING TRANSPARENT PACKAGES

Glistening, crystal-clear acetate sales-containers by Cleveland Container lead the field in ingenuity, beauty, and economy of construction. We've produced thousands of such transparent and "window" containers for every industry—and in almost every imaginable shape and size. Tell us your desires—and we'll gladly offer suggestions—without obligation.

2. NEW LOW COST FIBRE DRUMS

Here are the new containers you've been awaiting! They're lightweight, tough and strong. Snug fitting lids come off and on at will.

Yet costs are exceedingly low!

You cannot get thriftier or better paper packages. They come in plain chip, manila-lined or solid manila, and may be paraffin coated or fitted with "Cellophane" or "Pliofilm" pouches. Our specialties include various sizes of fibre cans, cores and tubes.

3. NEW CELLOPHANE-LINED FIBRE CANS

Here's new protection to moist, oily, volatile, dry, aromatic or anhydrous contents—at *great savings* over other containers! These new "Cleveco" fibre cans offer lintproof, odorproof, tasteproof and, if desired, moistureproof walls against contamination of foods, dry dessert mixtures, drugs, chemicals, confections and tobacco. *Brilliant colors of the laminated lining* contrast with the color of your product—dramatizing its quality and purity. *Ideal for Sales-Packages and as Mailing Tubes for samples!*

FLASH! *Announcing*

NEW TWO-COLOR PRINTING DIRECTLY ON SPIRAL-WOUND FIBRE TUBES AND CANS!

No more pre-printed labels necessary! Printing is applied on outside ply. Big savings! Investigate today!

Phone or write your nearest Cleveland Container office for custom-made samples of what we can do for your product.

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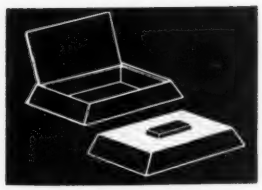
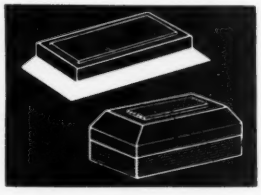
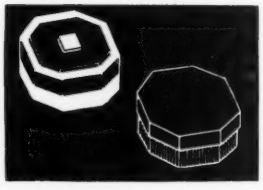


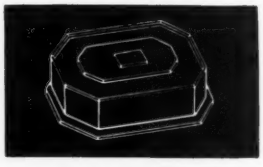
7. A fancy candy box, although adaptable, of course, to many other products. It has solid wrapped beveled base with flat solid wrapped lid hinged to recessed shoulder. In contrasting colors, with addition of ornamentation of plastics, metal or paper-covered board, it makes a most appealing presentation. Generally used for holiday packaging.



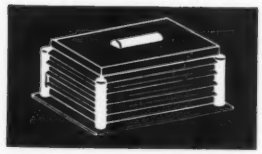
8. Left, shallow beveled base with solid wrapped lid, plus flat covered pad with regular shoulder construction. It offers another variation which, when properly styled in contrasting coverings, presents a most interesting container. Right, a regular shoulder construction with variation of the lid, which is beveled into a straight side flange for closing onto base shoulder. A flat pad is added for effect.



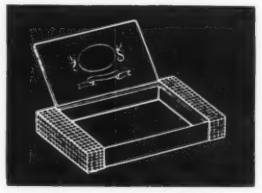
9. Left, equilateral octagon with outer base larger than shoulder on which the lid sets, giving a streamlined effect, augmented by small top plaque of plastic or chromed metal. Right, same type of octagon simplified into a simple base with shallow lid construction. In varying sizes, it becomes a smart package for face powder, cosmetics, flowers, confections and many similar things.



10. The general construction here is similar to No. 5, except the shape is eight-sided; viz., extension base with recessed lid, with series of flat pads, mounted pyramid fashion, as accessory decoration.



11. Illustrates the tremendous scope of physical design. To a regular shoulder style is added an extra wide and heavy extension base, with fancy covered flutings and covered pillars, and half-round decoration added to the top. Proper treatment creates a very exotic effect.



12. Another adaptation of No. 5. The base is extended in length, with separate trays or parts added to each end; both to conceal the otherwise opened ends.

13. The "band-box" style; at left, square with an extra tray or base the same dimension as the lid and glued onto the base to add distinctiveness; right, a round or oval band-box with all-over applied design, a familiar millinery style. Also used by manufacturers of famous brands of men's hats.

14. Mechanical and design ingenuity evolve startling and interesting shapes, such as the cocktail shaker and the star with regular extension base and lid—both formed with dies and general assembly by hand work.

PETERSON BROS.

Designers and Manufacturers of Novelty Wood Boxes

165 N. ELIZABETH STREET • CHICAGO, ILLINOIS

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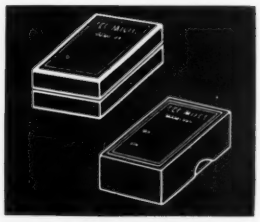
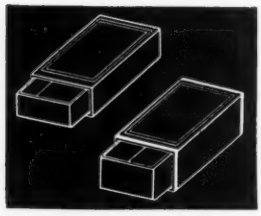
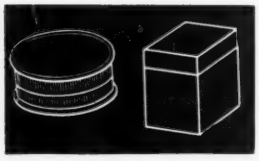


15. Left, familiarly known in drug-box fields as shoulder pill box if square, or powder box if oblong in shape. Constructed on special automatic equipment. Four colored edges show, accomplished by the use of two different colors and widths of papers. To the top is applied the prescription label. Right, for the same purpose, its construction simplified to regular telescope base and lid, with thumbholes located at sides for ease in opening.

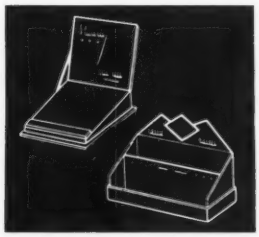


16. Left, known as white slides, produced on high-speed automatic equipment, the box being a tray with lid shell consisting of four sides with open ends. Stocked in standard sizes. Commonly used in the drug field and wherever small boxes are desired. Right, known as the dandy slide, similar in construction, but with the edges of the shell left uncovered.



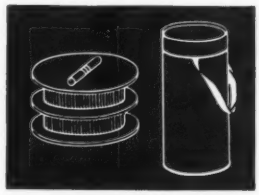
17. Left, round pill box used for dispensing apothecary-pill prescriptions. In general construction, automatically made as the shoulder pill box, but, of course, round in shape and extension added.

Right, shouldered utility produced in several standard sizes. Here the depth is greater than the square of the length and width. Used in the retail drug field for dispensing powders, "dry drugs," etc.



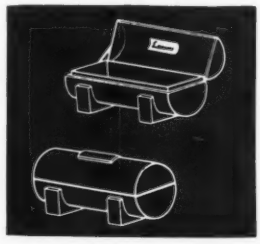
18. Left, set-up box becomes smart display. Basically, an extension plus a tapered base, with a tray added to hold merchandise, and hinged panel for interior billboard.

Right, a composite of base tray and folding board, printed on both sides and in several colors. Merchandise is packed and complete unit is ready for immediate "sales work," functioning upon arrival at the retailer.

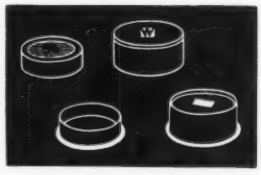


19. Left, a round box with heavy died-out circles, plus a top handle of lacquered wood applied with band of foil, gives a modern motif.

Right, a box well tailored in construction and design, with ribbon handle for ease in carrying.



20. An adaptation of a cylindrical container cut in two lengthwise, with shoulder for lid closure. Plastic pedestal adds to appearance and functions as feet or base. Label inserted inside cover and hinge strap or tape of ribbon to open.



21. Left, well-known round telescope box with projecting edge or extension base drum of transparent cellulose top.

Right, same style of construction, excepr drum is of paper died out with window or opening covered with transparent cellulose.

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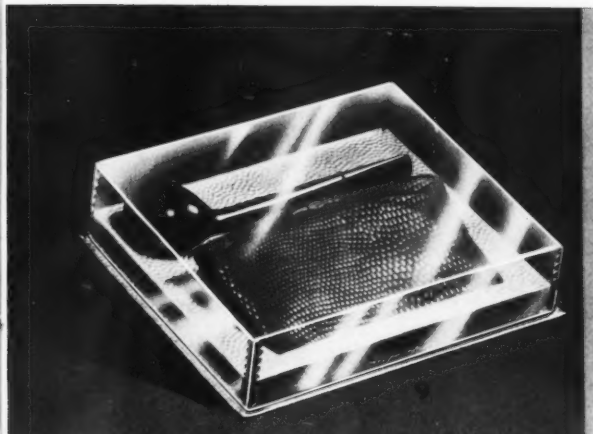
5

CREATORS of BOXES and DISPLAYS THAT SELL MORE MERCHANDISE

1. FRAME-VUE MERCHANDISER . . . . . WITH CELLULOSE WINDOW.
2. FRAME-VUE DISPLAY PACKAGE . . **3.** QUICK-SET DISPLAY CONTAINER.
4. FRAME-VUE . . . . . SLIDE LID . . . . . WITH CELLULOSE WINDOW.
5. AND **6.** INWARD COLLAPSE . . . . QUICK SET UP . . . . ONE PIECE.
7. INWARD COLLAPSE . . . . . QUICK SET UP . . . . . TWO PIECE.
8. EXTENSION EDGE . . . . . INWARD COLLAPSE . . . . . TWO PIECE.
9. R-I-G-I-D TRANSPARENT PACKAGE . . NON GLUED CORNERS OF ORNAMENTAL METAL.

DIRECT YOUR PROBLEMS WITHOUT OBLIGATION TO PACKAGE MERCHANDISING DEPARTMENT FOR EXPERT ANALYSIS

The C. W. ZUMBIEL CO., CINCINNATI, O.
Quality Folding and set-up packages since 1876



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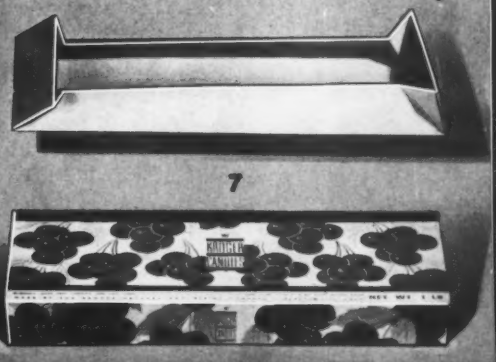

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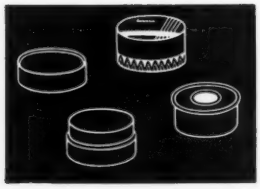
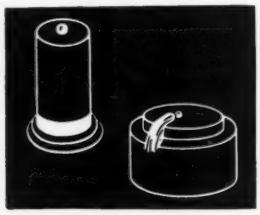


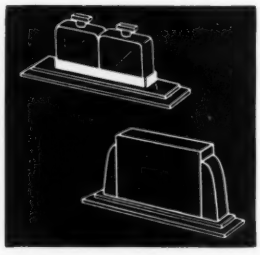
22. Left, shoulder style of face powder box with curled edge top and regular paper-covered drum.

Right, regular telescope extension base construction face powder box, with drum built into base. Filled from bottom and sealed with plug and bottom label.

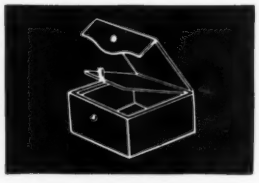


23. Left, glorified round box for perfumes; graduated extension base with band of velour over foil covering and plastic ornament on top; shallow shoulder on base to hold bottle.

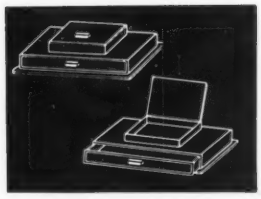
Right, enlarged base covered on top surface and died out to take shoulder which runs straight down to bottom. With stamped metal top lacquered in colored design, plus silk tassel, an intriguing container for dusting powder, etc.



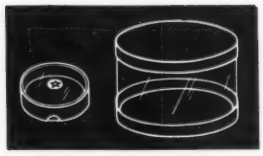
24. Left, perfume box built around graduated and elongated base extensions with shallow (functional) shoulder to hold two bottles. Cover (right) well tailored, augmented by plastic pieces, gives harmony of container and contents.



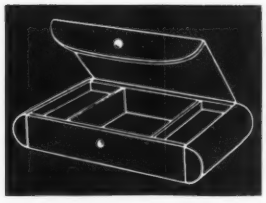
25. This container connotes character and quality of product; basically a base with recessed drum which is readily cut open for easy access to powder, yet snugly shut for travel, augmented by hinged cover with flange and snap button.



26. An adaptation of shell-style construction, back side closed, extension added; drawer or tray easily drawn out; plastic, wood or metal pull. Regular base smaller, yet of proper dimensions. A suggestion for presentation of companion products such as men's wallets, keytainers, etc.



27. An adaptation where transparency and rigidity is desired. Left, smaller, with top and bottom transparent and telescope base and lid construction. Thumbhole added for ease in opening. Right, larger, side wall is transparent and base and cover are added for firmness and as closures.



28. Well tailored basically, with long-wearing cover such as pyroxylin-coated fabric and series of trays forming compartments. Wood ends, well covered, with flat firm covered lid with snap button on front flange. This container has great after-utility and many products, wherein container is handy storage after purchase, do well to use such a sturdy, well-wearing type of box. More costly initial cost, yet well worth it in consumer good will for long-life product.

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AT RIGHT—Square hinged lid gift box; ideal for cakes, cookies or candy. Grease-proof silver foil lining; 3 lb. capacity. A variety of designs and colors.
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BELOW—Round gift box for cakes or confections. 5 lb. capacity. Greaseproof silver foil lining. Numerous designs and color combinations.

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CAKES	HABERDASHERY
CANDY	JEWELRY
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Fine Gift Boxes with High Re-Use Value

Deeply embossed and richly decorated—Mastercraft gift boxes clothe your product in a new exciting atmosphere. All the beauty and appeal of genuine hand tooled leather. Yet Mastercraft gift boxes are so adaptable and the prices so moderate that they can be used for large volume merchandise.

Well constructed throughout, their utility and beauty give them a long re-use period and sustained advertising for your product.

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Transparent Combination Boxes

The term, "transparent combination boxes," has been devised to describe containers which utilize paperboard constructions in combination with transparent acetate, vinyl or ethyl cellulose sheet materials. Such combinations provide advantages, in certain cases, which cannot be obtained through the use of either all-paperboard or all-transparent sheet containers.

In some cases, the advantage lies in reduced costs, where a transparent hood or a single transparent wall is sufficient to give the desired visibility and where the remaining portions of the package may be more economically produced out of boxboard. More frequently, merchandising advantages are obtained in terms of great beauty or in the provision of suitable backgrounds for the display of the merchandise or in terms of re-usability of all or part of the container.

The simplest form of combination container involves the use of a boxboard base and a transparent rigid hood or cap, telescoping partly or fully over the base. Numerous containers are today being made with transparent panels extending over the top or one or more side walls. These are inserted into the set-up construction in various ways. Sometimes they are stapled into place and the edge is then covered with decorative papers. In other cases, the transparent film is set into a die-cut box wrap as a window patch and the whole is then set onto the boxboard undercarriage. This method permits the use

Cross References: Set-Up Paper Covered Boxes, page 74; Rigid Transparent Containers, page 104; Rigid Transparent Displays, page 150; Printed Transparent Sheeting, page 166; Set-Up Boxmaking Machinery, page 466; Transparent Boxmaking Machinery, page 472

1. A wide diameter drum type boxboard base, covered in a flower design pattern, is topped with an imprinted transparent hood with beaded edges. Courtesy Monsanto Chemical Co. **2.** A dusting powder drum with a top compartment having a transparent slip-cover. Courtesy Celluloid Corp. **3.** A group of oval boxes with rigid transparent acetate lids. The acetate side walls have been printed in gold to harmonize with the boxboard bases. Packages fabricated by F. N. Burt Co., Inc. Photo courtesy Eastman Kodak Co. **4.** An extension edge boxboard base is topped by a full-telescoping decoratively imprinted transparent lid. Box by Cambridge Paper Box Co. Photo courtesy Monsanto Chemical Co.

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Watch Boxes

Hair Brush Boxes

Nail Polish Boxes

Perfume Boxes

Round Powder Boxes

Fountain Pen Boxes

Razor Boxes

Silverware Boxes

Playing Card Boxes

Writing Paper Boxes

Counter Displays

Smoking Pipe Boxes

Belt & Buckle Boxes

Soap Boxes

Thread Boxes

Jewelry Boxes

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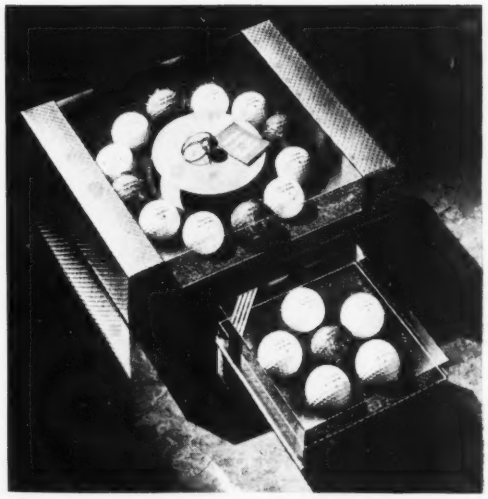

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5. An extension edge base, covered with a hammered foil paper, provides a suitable background for this shaving brush. The transparent lid uses metal stays. Photo courtesy Monsanto Chemical Co. **6.** A gift presentation for golf balls. The larger box has three partially transparent walls combined with embossed foil-covered boxboard. Thus the container achieves great strength and rigidity while providing ample visibility for the product. The smaller container uses an all-transparent lid telescoping onto a set-up base. **7.** The transparent hood of this heating pad box fits neatly into the ingeniously formed sloping walls of the boxboard base. A package designed primarily to facilitate product display and reduce consumer handling. Courtesy Eastman Kodak Co. **8.** A set-up boxboard display container with large rigid transparent window, permitting a view of the product. Courtesy Monsanto Chemical Co.

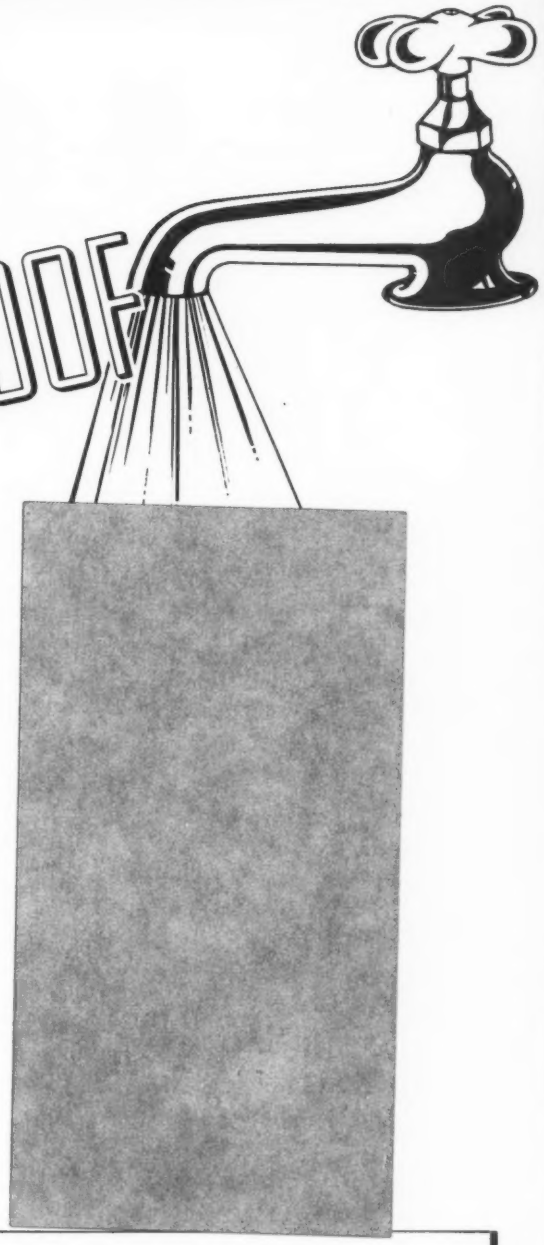
of a relatively light-weight transparent sheet, since the basic structural strength of the package is provided by the boxboard frame.

In still other instances—usually for round containers such as powder boxes—transparent hoods, formed by a drawing process, are used as slip-covers, telescoping partly or fully over the fibre drum base. At least one large powder manufacturer uses a drawn transparent hood as a tightly shrunk outer covering for a paperboard power drum cover. Here the transparency does not disclose the product, but serves to provide a high finish and a protective coat for the underlying decorative paper.

Combinations of transparent materials and boxboard have achieved particularly wide usage in counter displays and in packages intended for temporary use as counter displays. Within the last year, several score of such display units have reached the market. They have the advantage of very substantial sturdiness combined with relatively low cost and unbreakability. Where more permanent fixtures are desired, the transparent window is still retained (where glass might formerly have been utilized), but the fixture is formed of wood, metal or plastics, rather than of paperboard and fancy papers. In many instances, however, the price of the product or the period of use as a counter display is within a range which makes the utilization of a transparent combination box construction the most economical and the most effective.

The Best Boxboard Money Can Buy--

Now MOISTUREPROOF



A complete line of box boards is now available for moisture-proof and grease-proof packaging. So thoroughly moisture-proof and greaseproof are these lined boards that new protection possibilities in the packaging of meats, cake and other perishable products are immediately opened up.

Our entire line of quality boards fills every box and carton need and requirement. From Royal Satin—for the finest handmade boxes—through the less expensive types of folding and set-up box board for mass production packages, Butterfield-Barry boards are the tops in each category.

We are equipped through years of experience to advise on your packaging problems. Our unlimited production facilities are at your disposal.

.016 Bleached Manila Lined News, lined on the news side with Opaque Glassine Paper and combined with moisture-proof adhesive.

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ROYAL SATIN · HIGH WATER FINISH, REGULAR FINISH NEWS AND CHIP · ALL GRADES FOLDING BOX BOARD, SHEET LINING A SPECIALTY

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Paper Containers for Liquids

1

Liquid-holding paper containers have been in use for a number of years, but within the last twelve months their field of usefulness in packaging has been substantially broadened. New types of containers have been developed, old types have been improved and numerous new applications initiated.

General Types

Cylindrical and slant-walled canisters are among the oldest type of liquid-holding containers. They are usually formed of a fine grade of bleached sulphite and are wax coated or otherwise treated to secure long time impermeability to moisture. The wax coating serves

Cross References: Specially Processed Cartons, page 68; Fibre-Bodied Containers, page 98; Cellulose Derivative Containers, page 148; Filling Liquids and Pastes, page 396; Capping and Sealing Equipment, page 402.

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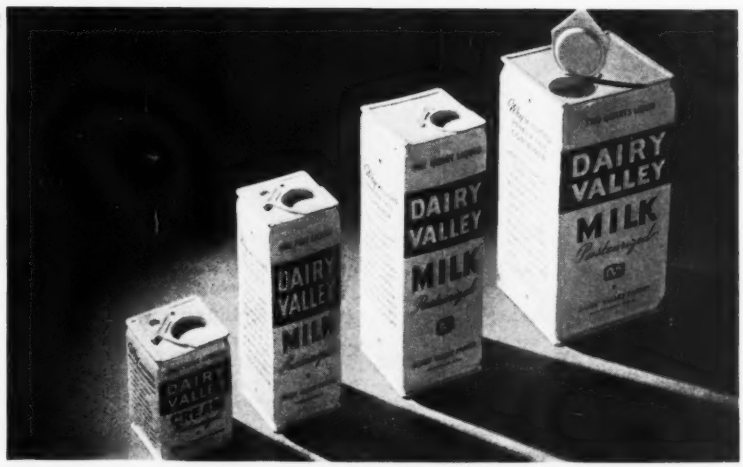

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1. Conical pre-fabricated "bottles" with metal ring closure seats and paper closures. Photo courtesy Sutherland Paper Co. **2.** Pre-fabricated rectangular "bottles" with stapled-on hinged paper closure. Square shape permits solid packing without air spaces. Photo courtesy American Can Co. **3.** Conical containers with tear strip opening device. The outer and inner walls of the container are perforated horizontally, but at different levels. Thus finger pressure forces a break in the perforations and permits the user to tear off the entire top of the container. Note detailed and illustrated instructions for opening on face of second container from left. Photo courtesy Mono Service Co.

Serving a DISTINGUISHED Clientele with DISTINCTION

BOXES

DISPLAYS

ARROW serves nationally known leaders in varied fields of industry. Many rely on Arrow as their main source of supply for distinctive boxes and compelling merchandise displays.

Extensive manufacturing facilities, a capable group of designing artists, and a staff of merchandising representatives enable Arrow to render an intelligent type of box and display service.

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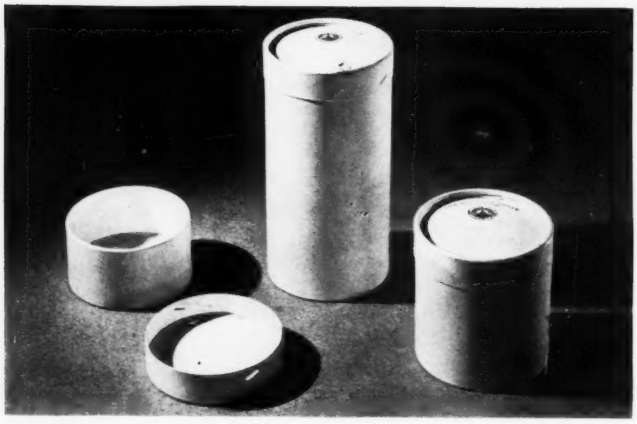

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4. Pre-printed "bottle" blanks for Pure-Pak type containers. Blanks are shipped in this form to the dairy. Courtesy The Gardner-Richardson Co. **5.** Front, back and side views of the Pure-Pak type container. Note wire staple, top seal and pull tab opening device. **6.** Cylindrical two-piece liquid-holding container, spiral wound with slotted vents on cover side walls to facilitate opening. Photos courtesy The Menasha Products Co. **7.** Newly developed 2-qt. dairy-erected container. Note double walls and opening device (here shown opened). Photo courtesy Ex-Cell-O Corp.

to stiffen the board to a substantial degree and this permits the effecting of a relatively tight seal by the use of die-cut paperboard closures which fit as friction plugs into the tops of the containers.

On cylindrical types, partially telescoping, overlapping lids are frequently utilized. One newly developed type utilizes slots, located slantwise in the side walls of these lids, to provide air vents which facilitate removal of the canister covers.

Pre-fabricated "Bottles"

Developed originally for milk and cream and still largely restricted to this purpose are a number of types of so-called paper "bottles" pre-fabricated in boxmaking plants and shipped under sanitary conditions to the dairy where they are filled and re-sealed either on standard bottle filling equipment or—in the cases of some types—on special machinery. These containers vary widely in their structure, some assuming the form of truncated columns with metal inserts at the neck opening to provide rigidity and to permit of the use of plug-type paper closures. Others are rectangular in shape with tops and bottoms seamed to a formed side wall blank and with staple-attached closures.

Bottle "Blanks"

Other types of paper milk "bottles" are supplied to the dairy as flat blanks and are erected and sterilized immediately prior to filling. Here again, shapes vary from the cylinder with pleated top through the cone with flat metal closure to the rectangular type with slanting top and side walls and an integral closure opening.

Liquid-Holding Bags

The development of water-holding sheets, such as rubber hydrochloride, has permitted manufacturers of products

Cartons

OF EVERY DESCRIPTION

Here's how you'll gain by joining the growing roll of satisfied, steady users of Fort Orange cartons:

Integrated facilities assure you unusual savings. Our plant is so exceptionally well equipped that the manufacture of superior boxboard, photo engravings, printing ink and the fabrication of cartons is completed under one roof. There are no waste steps from pulp to finished carton. You gain by the consequent important economies!

Every type of carton made here. There's no limit to the variety of constructions, sizes, weights and finishes on packages that we supply to companies in almost every field of industry. Many of the most ingenious methods of folding and die-cutting were first performed here, to the profit of our customers. Transparent window packages and high-register color printing are specialties with us.

Ideal location for shipping economies. At Castleton on Hudson we are on main freight routes—with low rates for delivery to New England, the Mid-Atlantic States and the Midwest. Quick, prompt rail, truck and water shipments. Call us now for your needs.

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of a liquid or semi-liquid nature and of products sold in brine to use water-tight bags as their containers. Such containers, in the smaller sizes, are sometimes used in the form of a bag alone with heat-sealed closure. Larger sizes, requiring a rigid form for merchandising appearance, shipability or structural strength, are usually placed in folding cartons. Several applications of this sort are shown in the accompanying illustrations. In some instances, the transparent water-tight sheet material is laminated for reinforcement and greater strength.

Sanitation Requirements

Paperboard containers for food products are usually manufactured of board specially prepared in a way to insure against contamination. The coating process, involving immersion or spraying with hot wax or similar materials, acts as a further insurance in sanitation. Great care is exercised by manufacturers to protect the containers against contamination during shipment to the packaging plant.

Decoration

Paperboard liquid-holding containers may be decorated in a colorful manner. Printing usually precedes the impregnating or coating operation. Wax coatings, of course, have an effect on the printing which must be allowed for in planning the design. The general effect is to soften tones and lighten them to a degree.

Paper Container Economies

Much controversy has existed, particularly in the milk field, over the relative economic desirability of glass containers as contrasted with paper containers. No clear-cut statement can be made since the relationship of costs varies with every dairy operation. In general, it may be said that the original cost of the paper bottle is less than that of the corresponding size of glass container. The cost per trip is a more debatable point, involving such factors as relative shipping costs, in view of weight differentials, bottle breakage, glass container cleaning costs, multiple trips of glass bottles as contrasted with single trips of paper containers, etc.

Paper "bottles," in their various shapes, have lent themselves to a wide variety of uses. Among products so packed are sweet and sour creams, chocolate milk, ice cream, orange and other fruit juices, cheeses, sausage meats, beans, pickles, peanut butters, jams, jellies, preserves, cake flour, dessert powders, etc.

8. Pre-fabricated containers for hot foods, liquids and semi-liquid products. Slanting side walls permit "nesting" for shipment. Covers snap into groove and are lifted by wire or paper tabs. Available in paraffined and unwaxed types. Courtesy Lily-Tulip Cup Corp.
9. Liquid-holding bag for oil formed of laminations of paper and Pliofilm. Shipped and stored in printed outer boxboard cartons.
10. Transparent liquid-holding heat-sealed bags as used for pickles in brine. Partition display provides shipping and storage protection.
Photos courtesy The Goodyear Tire & Rubber Co., Inc.

More and more of the most progressive merchandisers in our country are changing from UNcoated carton boards to A.C.M. CLAY COATED! For, clay coating adds that appearance of quality and distinction so necessary to a successful package. Ask your carton maker, or our own modern carton plant to prove your plates on A.C.M. CLAY COATED. The vast improvement you'll see and feel will lend powerful aid towards increased sales and profits!

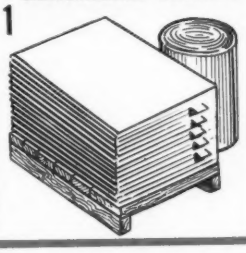
A COMPLETE PACKAGING SERVICE

1. Although we're the world's largest manufacturers of clay coated carton board, we can also make any grade of carton board you might specify for packaging and display purposes.
2. Skillful designers will gladly revise or create a wholly new design without extra cost.
3. Bottle Carrier Cartons in stock designs or custom made.
4. Giant replicas of your package.
5. Carton board packages and displays of every description.
6. Special holiday folding cartons of outstanding quality.

Whatever your packaging or display problem, phone or write our nearest office for quick, efficient service.

The trend is toward

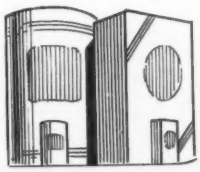
1 CARTONBOARD CONTROL



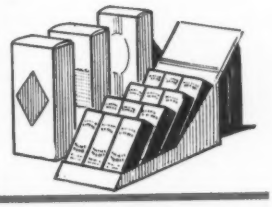
2 DESIGN SERVICE

3 CARRIER CARTONS

4 JUMBO CARTONS



5 CARTONS & DISPLAYS



6 SPECIAL HOLIDAY CARTONS

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A·C·M *Clay Coated* CARTONS AND CARTON BOARD

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Permanent and Re-Use Boxes

For certain types of package merchandise and under certain merchandising conditions, it is desirable to utilize containers having a high degree of permanence, beauty and re-usability. Such containers must perform many, if not all the functions of an ordinary package. They must transport the merchandise, permit of its display, encourage its sale by their attractive appearance and frequently serve as a measure of quantity. But beyond all these things, they must be suited to the consumer's taste and fit for some place in some particular portion of the consumer's home.

A wealth of construction methods and a wide variety of materials are available to the packager requiring a permanent or re-use box. The effects which he may secure are virtually unlimited and his choice of materials, structure and effect will depend, necessarily, upon his merchandising problem and his price and sales set-up.

Among the materials which have achieved wide usage in this field are molded pulp, polished woods and wood veneers, leathers, imitation leathers and fabrics, pottery, metals and plastics. Metal containers, plastic containers and rigid transparent containers are treated elsewhere.

The discussion of each of the other types, in the paragraphs which follow, should not be considered as a competitive presentation, but, rather, as an outline of the salient features of each. The competitive decision must obviously vary with every special problem in accordance with the weight given to various features when a decision is to be made.

Molded Pulp Containers

Molded paper pulp containers are light in weight, water-proof, seamless and highly resilient. They may be produced in almost any conceivable shape.

The natural pulp gives the package an appearance of cleanness and freshness and is available in any of four standard colors—white, cream, buff and gray. Other colors can be obtained by introducing a dye into the pulp beater. Its slightly rough surface has a pleasant feel and its mesh design adds to its attractiveness for packaging, especially when used in combination with colored labels, wraps, etc. However, finishes can be applied either with flat dyes or lacquers of extreme lustre which effectively simulate porcelain or glass.

Molded pulp packages were originally most commonly seen in connection with imported Scotch liquors and are sometimes mistaken for papier mâché. However, pulp containers are not pressed into shape by plungers or dies, but "blown" in the interior of a mold, assuring accuracy.

The mold consists of a metal shell full of holes, lined on the inside with a fine metal screen, which accounts for the mesh design. When the double mold is closed, the exact amount of pulp required is introduced automatically in water solution and driven, by pressure, through the holes, leaving the pulp evenly compacted inside the metal screen. The mold then opens and the completed pulp object drops on a belt and passes into a dryer.

The preparation of molds ranges from an approximate minimum cost of $200, for the smallest and simplest shapes, to $1000 for larger packages and novelty containers and runs even higher for bust and statuette displays, where full advantage is taken of the possibilities for complicated shapes and decoration. Lettering, trade marks, etc. can be embossed or debossed on the container just as with plastics.

Fancy Wooden Boxes

Since all wooden merchandising boxes are made either of all lumber or veneers or a combination of both, the manufacturer's first consideration is the kind of lumber needed for the job. The most widely used types are gumwood, poplar, basswood, cedar, mahogany, walnut, maple and redwood.

The finishing of a cedar box is a comparatively simple job, providing an excellent grade of shellac and varnish or lacquer is used. After one or two coats of shellac are applied as a sealing coat, each box must be hand

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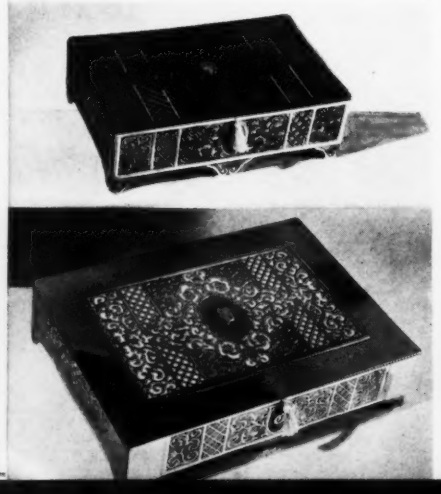

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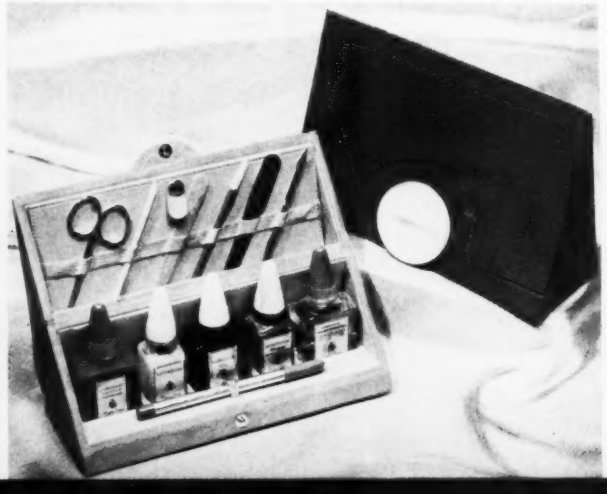
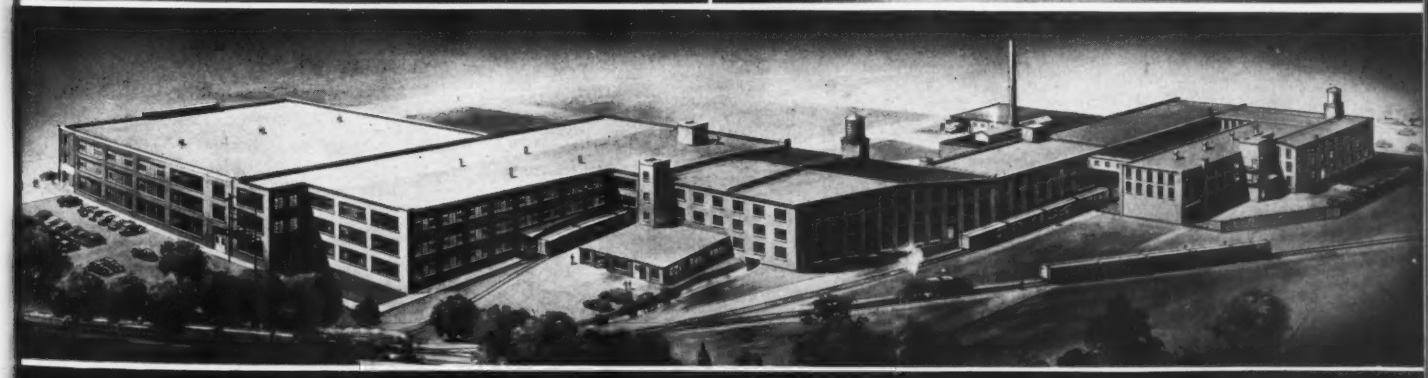


1. Boxes formed of highly embossed foil covered asphalt baseboard. Identical dies are used on both sizes. Photo courtesy Chaspec Mfg. Co. **2.** Leather covered cosmetic kit with silk lining.



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New York Office, 51 Madison Ave. New York Warehouse, Jersey City, N. J.

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sanded to remove the raised grain of the wood and then the varnish or lacquer is applied for the final coat.

The application of other finishes, particularly in colors, involves more detail. In applying a black lacquer, for example, a box must be first given a coat of lacquer sealer over which is applied a heavy body coater called surfacer or undercoater. Between each application of sealer and surfacer, a hand sanding operation takes place to provide a smooth surface.

One of the outstanding developments in the fancy wooden-box field is the rarewood finishes that are applied. These expensive-appearing finishes are exact reproductions of a wide variety of richly grained woods that ordinarily are too costly to use in popular priced merchandising containers. Usually a box made of gumwood is used to receive this finish, which is applied by special machinery designed for boxes only. After the necessary sanding operations and the required number of preliminary finishing coats are applied, the rarewood grains are applied, afterwards touched off by the final lacquer coats.

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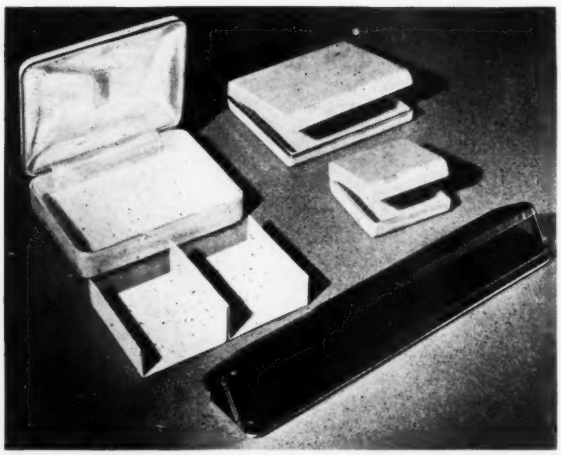

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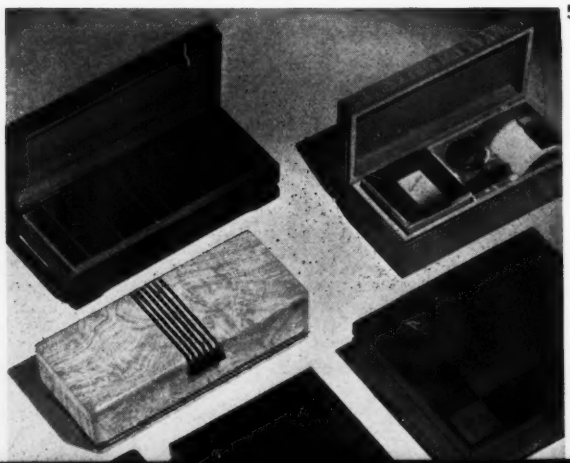

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Leather and Fabric Covered Boxes

Leather, simulated leather, velvet, velveteen, brocades and similar materials are frequently used as box coverings. While the finest materials, such as high-grade leather, velvets, silks and satins, are employed to a lesser degree than papers, their prestige and influence has been such that many paper boxes, and even some molded containers, are made with cover and even lining surfaces simulating leather and fabric effects.

Boxes of this general type are usually built over the frame of a special fibreboard (of wood thickness) or over a wood frame. Others are built over a metal shell, stamped out on punch-presses. The application of the coverings follows methods similar to those used in ordinary set-up paper boxmaking, the more expensive and exacting work being done by hand, while long runs are often done on machinery. Boxes are made in an extremely wide range of sizes and shapes, and while the rectangular and drum-type boxes predominate, a very large proportion of all boxes vary from these standardized sizes to include domed tops, ovals, octagons, etc.

A wide range of effects is possible when leather or imitation leather is used. Embossing and tooling processes are used to simulate antique tooled leather. Masks and color sprays are used to achieve colorful decorative effects. Relief embossing is frequently used, both on the tops and sides of containers.

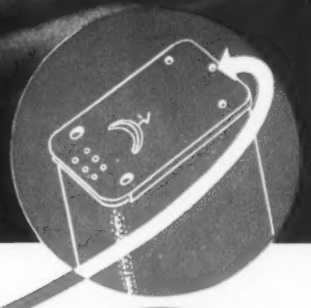
The extreme flexibility of fabrication, involving as it does no mold or die charge, permits their use on small initial orders to gauge a market. When large quantities are involved, the embossing-die charges are found to be relatively small. Fine leathers such as calfskin, morocco and reptile and fine fabrics, including the higher priced velvets and brocades, are frequently used for jewelry boxes where the size of the box permits the economical use of even these expensive coverings. Cheaper leathers such as sheepskin, cowhide splits and the like are more often used for larger boxes, and while generally inferior in wearing qualities to some of the imitations, particularly pyroxylin coated cloths and papers, more users find it advantageous to specify leather rather than a substitute because of the effect on merchants and consumers. When, however, extensive reuse is contemplated and the more expensive leather and fabrics are eliminated because of cost, it is advisable to utilize one of the synthetic products.

3. Embossed and decorated leatherettes over wood frames form these attractive boxes. Photo courtesy The S. K. Smith Co. **4.** Fabric linings and leather outer coverings applied over stamped metal shells. Courtesy Farrington Mfg. Co. **5.** Fine wood veneers and plastic or painted wood handles are used for these re-usable gift boxes. Courtesy The Pilliod Cabinet Co.

At Last

A NEW SHAKER TOP CAN

WITH OUTSTANDING CONVENIENCE FEATURES!



* Positive snap lock holds top in closed and sealed position. Cans will not open during shipment or on the shelf. Product cannot sift through.

* Positive stop automatically positions slide for sifting. One flick of the thumb of the hand that holds the box is all that is necessary.

* Convenient fingernail grip. Ninety-five per cent of housewife package complaints assail hard-to-open closures. Housewives can have no complaint about this one. It's fool-proof and it always works.

* Full opening stop likewise positive in action. Permits insertion of full size teaspoon and leveling on withdrawal. The slide never leaves the package. It cannot be mislaid or lost.

Some old style shaker tops were good. Some were terrible. But none combined the advantages of sifter pouring with complete accessibility to the product for the consumer.

Now R. C. Can has developed a real one-hand, fool-proof shaker top for fibre cans of rectangular cross section. Without removing the top from the can, the consumer can insert a full size teaspoon to withdraw a liberal, accurately measured portion of your product.

This new R.C. shaker top can is available in sizes to meet your requirements. It's inexpensive. It's new. It offers heretofore unattainable advantages.

Write today for samples and full particulars.

R. C. CAN COMPANY St. Louis, Mo.

BRANCH FACTORIES

RITTMAN, OHIO KANSAS CITY, MO. ARLINGTON, TEXAS

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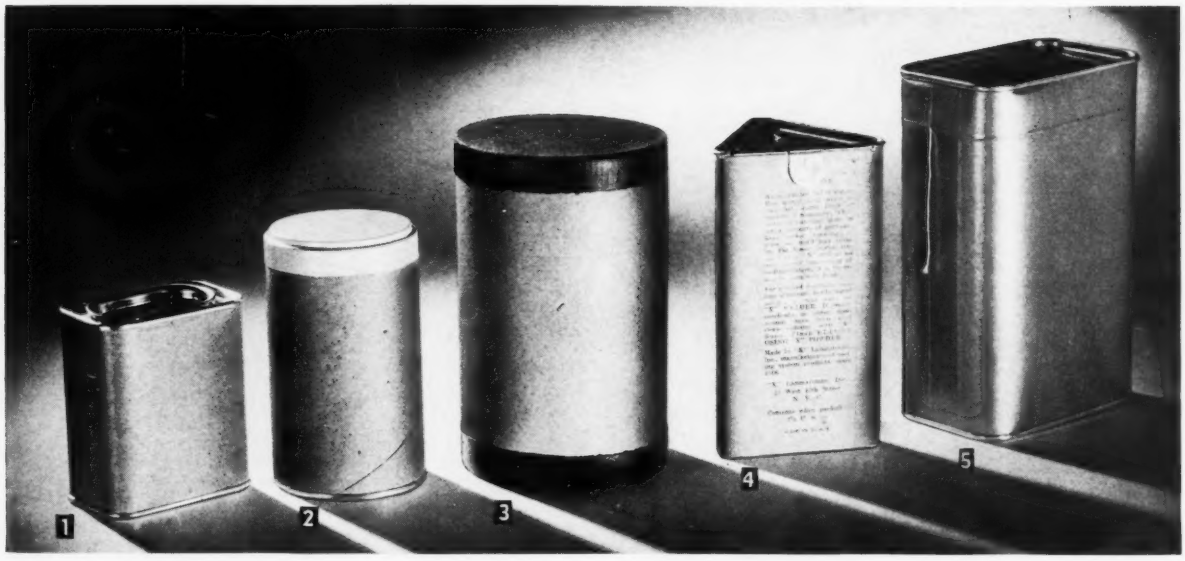

1. Friction plug top can. Metal end seamed to body. **2.** Spiral wound round can with metal base and metal slip cover. **3.** Cylindrical can with paper base and cover. **4.** Triangular closed top tamper-proof can with patented opening device. **5.** Tamper-proof metal end can with pull string opening device. Illustrations courtesy Sefton Fibre Can Co.

Fibre-Bodied Containers

The fibre can bridges the gap between the paper carton and the metal container. It has been widely adopted for dry products such as spices, foods, drugs, cosmetics and chemical products and, more recently, has extended its field of application to even such wet products as motor oil. The bodies of fibre cans are constructed of specially made fibreboard and are formed on high-speed machines which can produce long runs economically. Since the cans carry paper labels, the only economic limitation on short runs is that which has application to the paper printing process.

The fibre cans used for dry products may be divided into nine distinct types, all of which are made in a wide variety of sizes and shapes. The physical construction of each type will vary somewhat, according to the ideas and equipment of the manufacturers. In general terms, these types are as follows:

Paper Cap Cans

The paper cap fibre can is generally confined, because of technical problems, to cylindrical shapes for commercial use, although one or two oval cans have been marketed. This type can is made with fibreboard ends, called paper caps, that are either removable or sealed on. The top end is frequently fitted with a pouring or sprinkling device. The caps are furnished in a variety of colors and, within limitations, may also be embossed or printed. Body labels may be applied either by the can maker (putting them on underneath the cap ends) or by the user after filling. In the latter instance, they are placed over the flange of the cap and seal the package. This type package makes an excellent container for table salt, bread crumbs, cereals or other products requiring the least expensive type of container that will satisfactorily hold the contents.

Friction-Plug-Top Cans

The friction-plug-top fibre cans have metal ends seamed on the body and are manufactured with round, oblong, oval or square bases. The plug is securely held in place by friction and yet may be pried loose without annoyance. The throat of the friction-ring

Cross References: Specially Processed Cartons, page 68; Paper Containers for Liquids, page 90; Protective Materials —General Considerations, page 177; Printed and Lithographed Labels, page 300; Labeling Machines and Devices, page 420; Types and Functions of Adhesives, page 474; Metal and Fibre Drums, page 530.

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For
SET-UP BOXES
of Every Type
E. N. ROWELL CO.
set-up boxes are made in many shapes and sizes, covered with all types of packaging paper. They are ideal for packaging and sampling of drugs, cosmetics, luxury products. The uniquely shaped powder box with the scalloped edges was designed by Laurence J. Colwell, Inc.
DUSTING POWDER
Rouge
COLUMBIA
16 TABLETS
ASPIRIN-GUM
THE PLEASANT AND EFFECTIVE WAY OF TAKING ASPIRIN
COLUMBIA MEDICAL LABORATORIES, NEW YORK
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St. Louis Office:
THE DICK DUNN CO.,
Merchandise Mart Bldg., 12th Blvd. & Spruce St. Phone: Central 3544
Detroit Office:
H. E. BROWN
2842 W. Grand Blvd. 319 Curtis Bldg. Phone: Trinity 2-0191
Boston Office:
H. P. TUCKER
52 Chauncy St. Phone: Hancock 0398
Chicago Office:
H. A. MICHEL
134 N. La Salle St., Rm. 1421 Phone: State 4582

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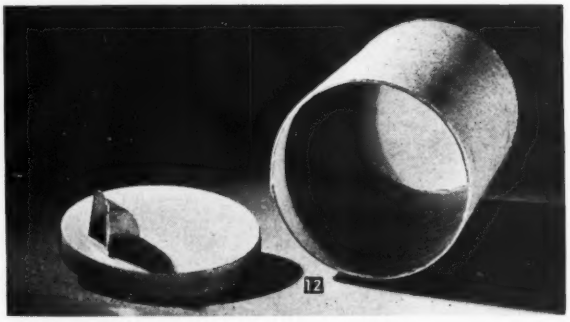
6. Closed-top can with punch hole sifter and tear string opening device. **7.** Telescope can shown partially open. **8.** Raised-neck-top can with reclose-able powder sifter. **9.** Planetary-top can. Overcap revolves against under-cap. When sifter holes are juxtaposed, pouring is possible. **10.** Threaded fibre body screw-top can. **11.** Screw-top can with crimped-on threaded metal neck. **12.** Paper cap salt can with metal pouring spout. A spiral can with spirally wound parchment liner

may be curled, eliminating the possibility of cutting one's self on a raw edge. This is particularly desirable in a top where the opening is large enough to permit the hand to enter. Sometimes the plug has a special lifting device to facilitate opening; otherwise, a coin or some such improvised lever is required to remove the plug. This type can is generally used when a tight reclosure is desired and is an acceptable container for baking powder, cocoa, tea, spices, fertilizers and similar products.



Metal Slip-Cover Cans

The metal slip-cover fibre can is preferably made on small oval or round bases and is an economical container for products requiring a full opening. The cover must be furnished with a raw edge if the labels are to be applied over the flange after filling; otherwise a curled edge flange is desirable. The ends can be decorated or embossed to suit the purposes of the user.

Interrupted-Thread-Cover Cans

The interrupted-thread-cover fibre can is an unusually fine container for quality products. The covers are easily removed by a slight twist of the hand and yet are securely locked on when assembled. The full opening in the top permits easy access to the contents. This container may also be furnished with a drumhead seal assembled in the top, making the can tamper-proof.

Closed-Top Cans

Cans of this classification have metal ends with a closed bottom and top seamed on and provide a tamper-proof non-refillable package. The tops may, or may not, be fitted with revolving or push-slide dredges, pouring spouts and semi-perforated knock-out holes. Containers of this type make an excellent package for scouring powder, spices, birdseed, insecticide, powdered hand soap, etc. They are also widely used as a sealed container for automotive parts such as coils, piston-rings, distributors, filters, etc.

Planetary-Top Cans

The tops of these cans are two-piece, consisting of an undercap crimped on to the body and a revolving overcap assembled to the undercap. The overcap is made of nickeloid to provide a high-lustre end of striking appearance. The tops have a variety of sifter-hole arrangements and this package is excellent for such products as talcum powder, insect powder, grated cheese, deodorant crystals and fire-extinguisher chemicals, permitting them to be removed conveniently.

Raised-Neck-Top Cans

The top of this classification of fibre cans consists of a protruding neck assembled to the breast of the can. The neck is perforated with single or multiple openings, depending upon the powder contained in the package,

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LUMARITH PROTECTOID
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for WRAPS ★ WINDOWS ★ LAMINATION ★ RIGID CONTAINERS

LUMARITH PROTECTOID is a crystal-clear transparent packaging material • It never loses its grainless transparency • It does not shrink or wrinkle • It does not discolor or dry out with age • It is water-proof and moisture-resistant • It is grease-proof, odorless, tasteless, and non-inflammable • It is not affected by extremes of temperature or humidity • It cements easily and permanently • It has a perfect surface for one-color or multicolor printing • It protects against mold, germs, and infestation • It shows less fogging under refrigeration and changing temperatures • It meets the requirements of the B.A.I. (for meat packing) • It does not block up; therefore, can be stored for long periods • It is non-tarnishing • It gives true economy in packaging.

☆

☆

Write **today for your copy of the new 16-page technical booklet describing the results of a series of tests made with Lumarith Protectoid and other transparent materials. Get the facts! Packaging Division, CELLULOID CORPORATION, 180 Madison Avenue, New York City . . Established 1872. Sole Producer of Celluloid and Lumarith. (Trademarks Reg. U. S. Pat. Off.)**

If you are working on a transparent or plastic package . . .

Get in touch with CELLULOID

also Headquarters for PLASTICS

and is especially designed for packaging talcum or tooth powder. The neck is fitted with either a slip-on or revolving overcap to provide a closure. It is generally used on round, oval or oblong bases up to 1-lb. capacity, with a wide selection of tops and fittings.

Telescope Cans

These packages are made in three segments: An inner tube and upper and lower outer tubes. The fibre bodies are fitted together so that the outer tubes act as closures for the inner tube. This package is frequently used as a tamper-proof mailing case and the address label may be applied over the joint to seal the package.

Screw-Top Cans

There are two styles of screw-top cans, one having the fibre body threaded outside at the top and the other type has a threaded neck which is thrown up from a crimped-on breast to which the cover is assembled. Screw caps are generally knurled and curled.

Spirally Wound Fibre Can

The construction of the body of a spirally wound fibre can permits the use of many different fibres and adhesives in its production, which makes it adaptable to many purposes. In the manufacturing process, ribbons of fibre are wound around a steel mandrel, the diameter of which is the same as the inside diameter of the can to be produced. As these ribbons are wound on the mandrel angularly, one over the other, and so placed that the top one overlaps the joint on the under ply, there can be produced a tube of any desired length and construction, from two plies of one kind of fibre to many plies of several kinds of fibre, resulting, as in the case of the two-ply tube, in a thin tube, and, in the case of the multi-ply, a very heavy tube, or core, of any strength desired.

As the original tube, from which the can bodies are made, is composed of several individual ribbons, it is self-evident that almost any combination of material can be used, and, as the adhesive is applied to each individual ribbon, almost any adhesive can be used for any particular ply of ribbon. For instance, a body can be produced having the first ply of parchment paper, the second ply of almost any thickness of fibre, a third ply of different material, while a fourth ply can be a ribbon of colored paper, which would be wound on the outside of the tube and thus form a colored can.

In the spirally wound fibre can, almost any materials can be used, such as glassine, manila, kraft, straw chip, etc., and a ply of these materials can be introduced at almost any place in the body, to meet the requirements for which the can is intended. Spirally wound cans can only be made with round bodies, because the ribbons of fibre must slip around the mandrel, but this characteristic has its merits, as it permits continuous production, at a high rate of speed, with the resultant low cost of manufacturing. After the can bodies are wound into tubes, the length of which are determined by multiples of the length of the can being made, the tubes are hand labeled with strip (multiples of single labels made in one strip) labels and then cut into the proper can length.

13. Convolutely wound fibre can formed of grease-proof liner board with an oil-proof, water-proof glue. Seam sealed with oil-proof resin compound. Can ends formed of 100-lb. terne plate metal. Photo courtesy The Gardner-Richardson Co.

Convolutely Wound Cans

In producing the convolutely wound fibre can, an automatic machine is used and the ribbons are wound squarely on a mandrel, which revolves the required number of revolutions to complete the body, giving the necessary number of plies of the fibre ribbon. The ribbon is automatically cut and the can body moved along the mandrel to the position where the label is applied, which operation is accomplished during the time the next can body is being rolled. The body is then ejected from the mandrel in completed form, ready to receive the proper caps, or ends, which can be either fibre or metal in the round body, but metal only on irregular shapes.

The shape of the body depends upon the shape of the mandrel, which can be either square, oval, oblong, hexagonal, triangular or almost any shape where a ribbon of fibre can be wrapped tightly and fitted snugly to the mandrel. Corrugated bodies are not possible, as the fibre cannot be held in the grooves while winding.

The convolutely wound can has one characteristic which limits it to some applications. It is made completely of one ribbon of fibre and one adhesive, therefore cannot be lined with parchment or glassine.

Choosing the Fibre

There is no one standard body construction suitable for all the various products put into fibre cans. The right fibre materials must be worked out in the laboratory for each specific product to be packed. Products which are hydroscopic, or which will deteriorate if exposed to humidity, are put into cans with damptite, moisture-proof bodies. Some products, such as spices, have a high percentage of essential oils which require specially constructed grease-proof bodies.

TRANSPARENT CONTAINERS AND DISPLAYS

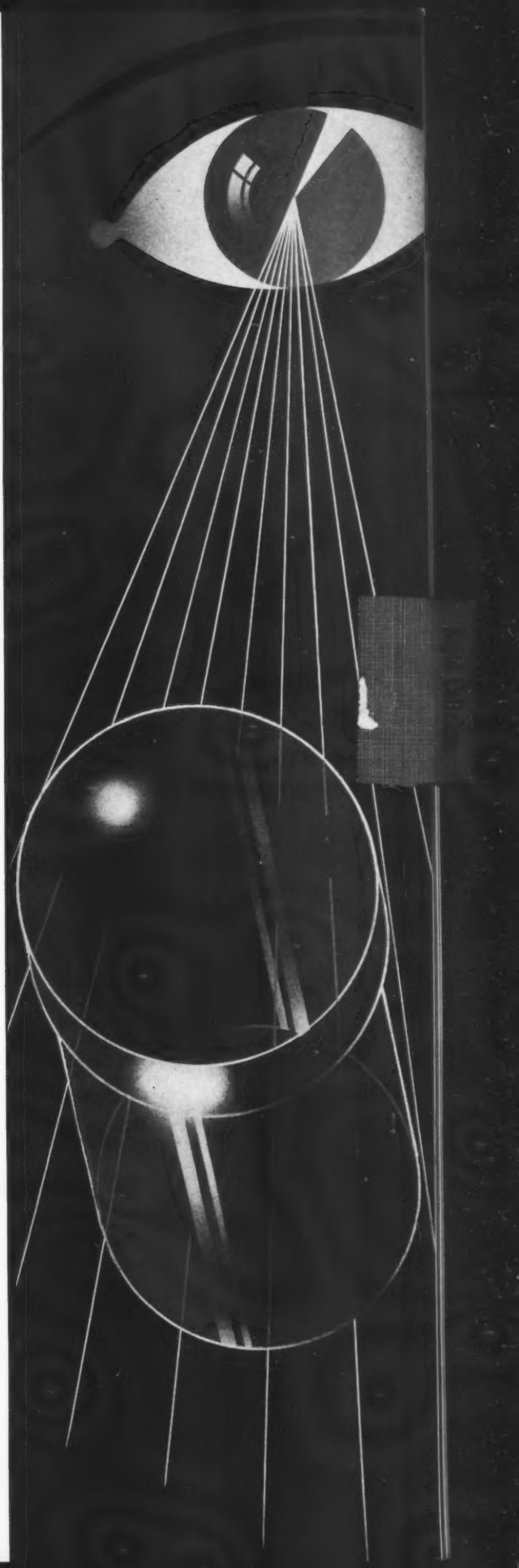
Section Four

Pages 103 to 152

RIGID TRANSPARENT CONTAINERS

CELLULOSE DERIVATIVE CONTAINERS

RIGID TRANSPARENT DISPLAYS



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Rigid Transparent Containers

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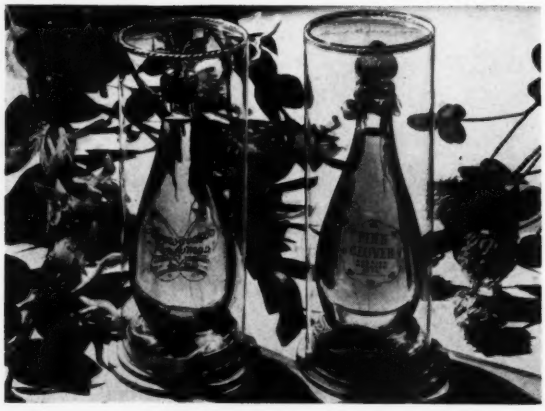

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The advantages to be gained by transparency have always attracted packagers and those interested in the development of new packaging materials. Thus, package development has had several widely separated periods which have been marked by a transition from opaque to transparent packages. In the liquor industry, the old brown jug was replaced by the glass bottle, which demonstrated the color and "bead" of its contents to the potential consumer. In more recent years, literally thousands of wrapped products shed their coverings in favor of cellulose wrappings. Finally, largely within the last few years, there appeared practical, rigid transparent containers which, in many instances, have replaced the paper box, tin can, paper can and even the metal collapsible tube.

The main reason which led to the development and introduction of containers of these types was, of course, the search for a sturdier, yet transparent housing for products best sold on their visual appearance. Thus, while a good deal of competition has existed between transparent containers and standard varieties of opaque containers, a large part of the volume in the transparent field has been built around products formerly left completely unwrapped or merely wrapped for convenience in shipment and intended to be unwrapped for store display. Thus, transparent rigid containers are widely used for hats, shoes, flowers, scarfs, gloves, collars, umbrellas and similar items.

With the development of these containers, they were soon found to possess advantages in addition to transparency which further served as contributing factors towards their choice. In the field of sampling, rigid transparent vials and jars are used because of their superior resistance to breakage and their light shipping weight. Rigid transparent boxes are often specified because they permit better window display, prevent the handling of merchandise or permit easier identification on shelves of the store or in household closets.

The aid of D. S. Hopping of the Celluloid Corp. and Shailer L. Bass of The Dow Chemical Co. in the preparation of this article is gratefully acknowledged.

Cross References: Transparent Combination Boxes, page 86; Rigid Transparent Displays, page 150; Transparent Wrapping Sheeting, page 188; Transparent Boxmaking Machinery, page 472.

1. Cylindrical display containers with slip-on metal tops and seamed-on metal bottoms. Courtesy Plastics Division, Monsanto Chemical Co. **2.** A group of novelty containers based on variations of the cylindrical shape. Courtesy Eastman Kodak Co. **3.** Gold cord is embedded under the beaded rims of these cylindrical transparent containers set on paperboard bases. Photo courtesy Celluloid Corp.

CONTAINERS, [illegible]BES

OF TRANSPAR[illegible]

Clearsite AN[illegible]

CELLUPLASTICS help *Sell* your products!

SEAMLESS

UNBREAKABLE

80% lighter THAN GLASS

MORE CONVENIENT TO USE

These ***modern*** containers flow along your standard production lines, saving time and money, arrive at dealers with less shipping costs and their rainbow choice of permanent, lustrous color invites consumer preference. ***Safer***—and more convenient for household, pocket, or purse use—they can be ***planned*** to fit your market by our experts . . . . with features that augment your product. Write or phone for preliminary data—without cost!

FIRST IN CELLUPLASTICS

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Formerly Hygienic Tube & Container Corporation

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N. Y. Display Office: 626 Fifth Avenue, New York, Tel: CI 6-2425

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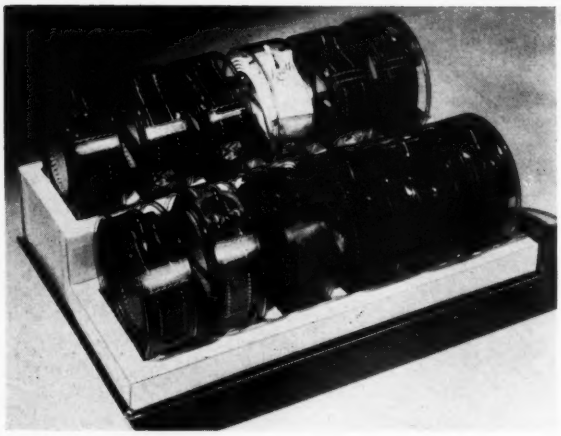
4

4. Oval transparent hoods with gold inserts in beaded rim to match pyroxylin paper of box bases. Courtesy Eastman Kodak Co. **5.** Beaded cylinders form protective housings for coiled belts, each set into a recess in this paperboard display. Courtesy Celluloid Corp. **6.** Notched cylinders of plastic tubing form the corner beads for the transparent hood of this display box. Courtesy Plastics Division, Monsanto Chemical Co.



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A primary consideration, when the use of a transparent package is contemplated, revolves around the question whether the product will benefit by full visibility. If it is a product ready for use, colorful and attractive in appearance and of a nature that is self-explanatory, the rigid transparent container may well serve to increase display and sales. If, on the other hand, the product is one which must undergo some household processing prior to use, or one which is of a nondescript or unattractive appearance, manufacturers will obviously do well to discard all thought of transparent packaging in favor of the opaque package which permits them to visualize, upon wrap and label, the satisfaction to be gained through the use of the product or its appearance after processing in the home.

Secondary considerations tending to induce the use of rigid transparent packages are found in the protection they offer the product during demonstration. Consider, for instance, the transparent box used for textiles, where it is desired to demonstrate the texture, color, weave and design of the article, without permitting the prospective customer to handle and, perhaps, soil the merchandise. Again, transparent containers permit easy identification of merchandise in which a wide variety of colors or types are offered, as in the case, once again, of textiles. This same quality of making selection easy provides a re-use value for the transparent container which opaque containers do not possess. Women who utilize three or four transparent hat boxes can always instantly tell just where any particular hat may be found, without opening any of the containers unnecessarily.

Showmanship that steals the Show

View Pac
RIGID TRANSPARENT CONTAINER

Show your product! Let your customers *see* its color, shape and texture! Give it a chance . . . with View Pac Containers.

View Pac Rigid Transparent Containers will display your product brilliantly — and protect it from handling, dust, and "shop-wear."

Perfume, padlocks, pencils . . . whatever you make, let us work with you to provide a packaging that will show it at its very best! U. S. E. has pioneered in transparent packaging; you'll find here designers with imagination and a nose for marketing; you'll find special facilities in the very important business of *printing* transparent containers.

We'd like to suggest a packaging to better your present sales . . . there's no obligation, of course. Simply write today for full information.

UNITED STATES ENVELOPE COMPANY
Transparent Container Division Springfield, Mass.

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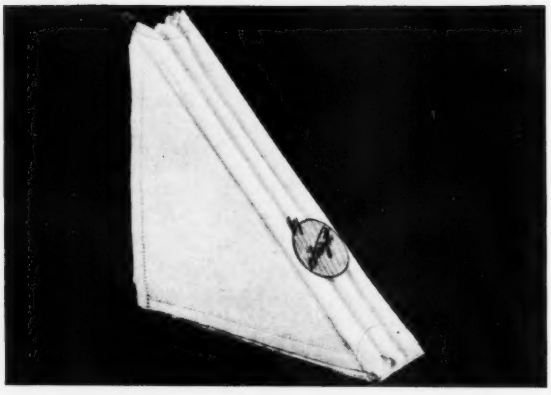

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Rigid transparent containers have, of course, a number of limitations other than their relatively high cost. To cite a single instance, manufacturers of hygroscopic products cannot utilize these packages because the materials from which they are made are moisture permeable. Certain types of hard candies will rapidly become sticky if packed in an ordinary rigid transparent container. Other products, which contain moisture which must be retained in the product, are likewise excluded from the group which may utilize this type of package.

Another limitation is found in the handling and packing of these containers which must be handled more carefully than ordinary cardboard containers or tubes because of their tendency to become scratched and chafed. In shipping, care must be taken to see that the packages are placed into shipping containers either with soft tissue paper to separate every package wall from friction or packed sufficiently tight to avoid movement.

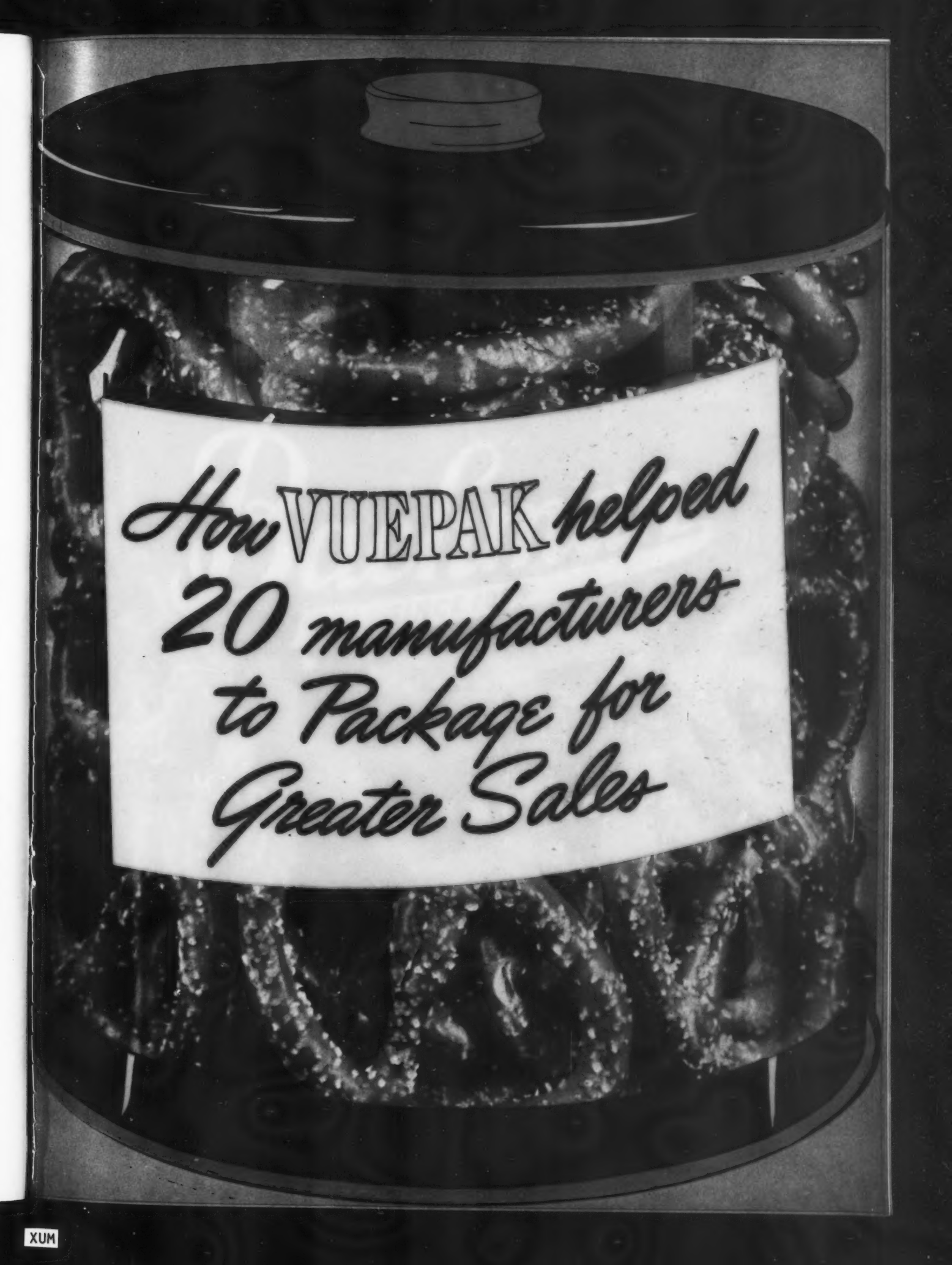
The materials from which rigid transparent containers are at present made are rated by the Board of Fire Underwriters as slow-burning materials, requiring no additional insurance coverage or limitations. In this respect, they are considered no more hazardous to store or ship than ordinary newsprint or cardboard.

Types of Sheet Materials

Transparent containers are made principally from cellulose acetate sheeting. In the last two years, however, the ethyl cellulose films and vinyl resin films have been developed and utilized for a growing number of con-

9

7. Vitamin capsule tray and cover of die-cut ethyl cellulose sheeting. Photo courtesy The Dow Chemical Co. **8.** Triangular handkerchief display container formed of a single transparent sheet. Courtesy The Dow Chemical Co. **9.** Printed acetate forms the showcase hood of this airplane kit metal display. Courtesy Celluloid Corp.


How VUEPAK helped
20 manufacturers
to Package for
Greater Sales

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6

VUEPAK

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Show Tell the World

VUEPAK is revising a time-honored selling axiom. Newly designed packages, in which VUEPAK is a major material, are building increased sales of foods, textiles, clothing, cosmetics, jewelry and countless other products. Even more striking are its many applications with products never before packaged.

Package fabricators are combining VUEPAK with reinforcing box board, foils or metals to produce lighter, stronger, more beautiful and more effective packages. Improvements in package-making equipment during the last twelve months have made VUEPAK containers available within the packaging price limits of almost every type of merchandise.

To give inquirers some idea of current developments is the purpose of this booklet. The 20-odd "case histories" here presented are actual examples of how VUEPAK has helped manufacturers increase their sales and profits. They will have more than served their purpose if they suggest to the reader ideas that can be profitably applied to his own business.

MONSANTO PLASTICS

Cellulose Acetate • Cellulose Nitrate

Cast Phenolic Resins • Polystyrene

Polyvinyl Acetals

Sheets • Rods • Tubes

Moulding Compounds

and

VUE-PAK
TRANSPARENT PACKAGING MATERIAL
TRADE MARK

MONSANTO PLASTICS

SERVING INDUSTRY...WHICH SERVES MANKIND

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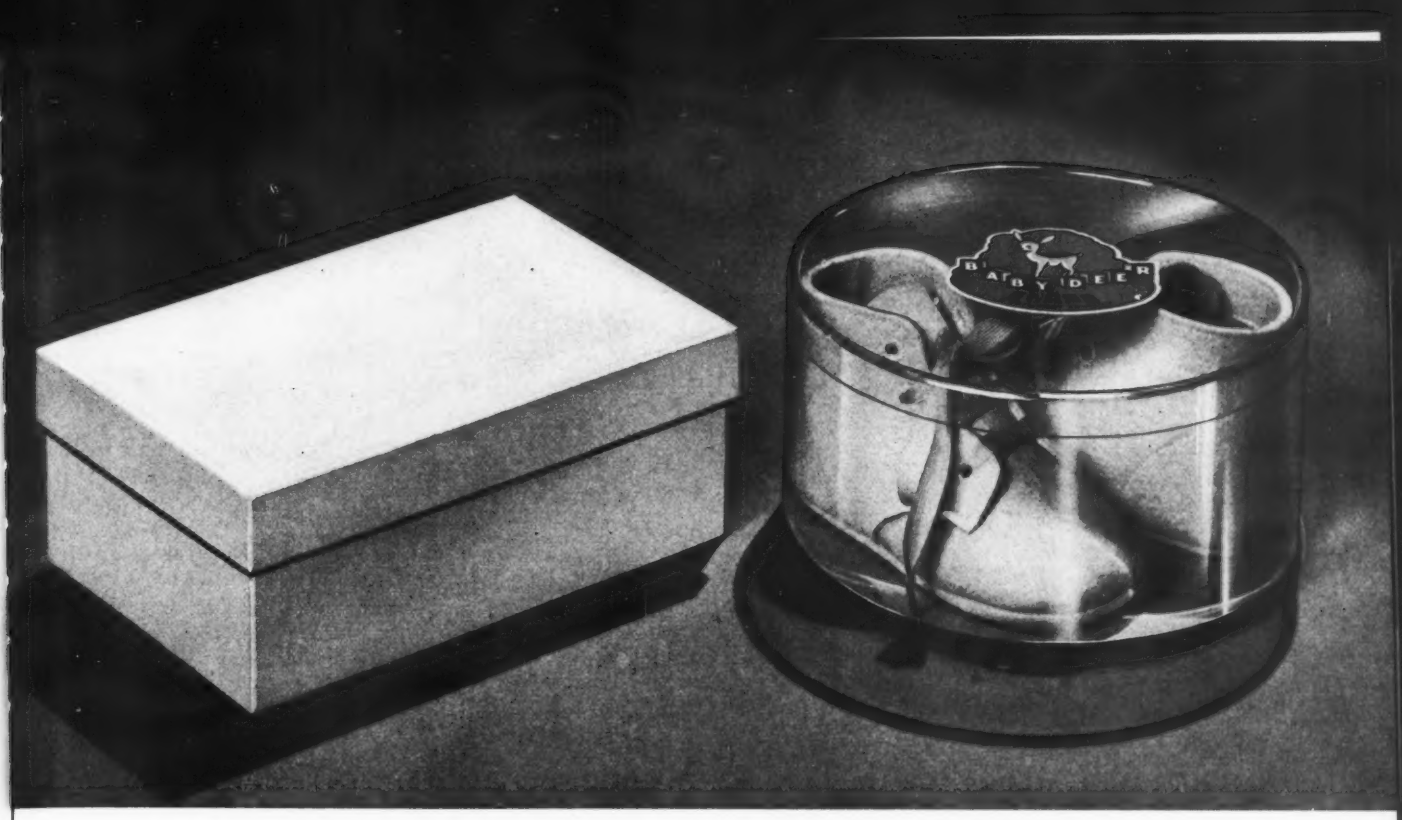

Baby Deer Shoe Box, made by Central States Paper and Bag Company, St. Louis, and W. C. Ritchie and Company, Chicago, for the Trim Foot Company, St. Louis.

Which Shows Tells the World?

Comparisons like this explain the tremendous interest in modern packaging.

New products, new packaging machinery, new merchandising plans, new legislation, have all had their part in developing this interest, but new packaging materials have been the greatest single factor in accelerating its advance. And none more than VUEPAK. Its instant acceptance and wide use are as much a tribute to the alertness of merchandisers as to its own many valuable characteristics. It has been truly said that "eye-appeal is buy-appeal." Packaging experts realized the opportunities which VUEPAK affords to exploit eye-appeal, and its wide adoption followed automatically.

Until recently many a manufacturer had turned a deaf ear to a discussion of packaging problems, perhaps feeling that his existing package was adequate from protective, merchandising and competitive angles, or because prior packaging experiments failed to demonstrate real profit possibilities.

But the art of package design is today being recognized as being far broader than "re-designing" an existing container. It embodies the use of new materials, in new ways, for new products and for old products never before packaged. Consequently, there is a rapidly growing interest in every aspect of the art.

VUEPAK Marches On

Many who will read this book will undoubtedly have had experience with transparent packaging materials. To them the technical handling suggested will be as interesting as the inspiration and ideas which we hope will be obtained by a study of the case histories.

We wish space were available to describe in detail all the problems which Monsanto fabricators have successfully solved in the last year or two. Sales volume is the ultimate test and many products have shown phenomenal sales increases since appearing in VUEPAK containers.

For these advances VUEPAK fabricators deserve great credit. Independently, and in collaboration with the Monsanto Research Department, they have developed many methods of combining VUEPAK and box board, metals and other materials which have allowed the use of lighter gauges of VUEPAK with consequent cost saving, yet without sacrifice of strength or attractiveness.

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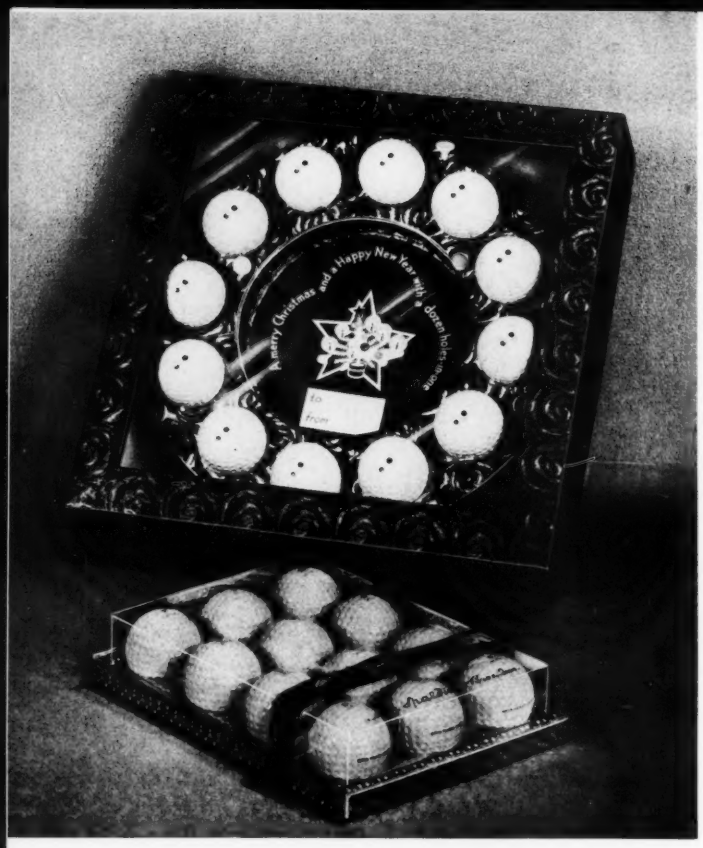


Gift Boxes by A. G. Spalding & Bros. employ VUEPAK fabricated by National Transparent Box Company, Springfield, Mass.

VUEPAK Insures Freshness and Cleanliness

Most products are almost invariably inspected by the consumer. Handling causes them to lose their freshness and results in mark-downs and returned goods, with consequent losses to manufacturer and retailer. VUEPAK containers insure against this loss, permitting the customer to examine the product without the need for handling or re-wrapping. The product can be ***seen***, but not ***hurt***.

Dealers Display and Push Products in VUEPAK

Merchandise well displayed is half sold. VUEPAK provides the smart merchandiser with the means of securing better retailer co-operation. Instead of having to plead for display, or buy it with expensive deals, he automatically obtains it for every unit of his product.

Dealers realize the advantages of displaying in VUEPAK merchandise. The clerks, too, like products in VUEPAK. Their time is saved in selling, for the product clearly seen answers many of the customers' questions by itself. Particularly, do they like VUEPAK for products which normally have to be unboxed, wrapped and replaced so that the customer can make a comparison. As between gloves or hose in VUEPAK and competitive brands in the old style boxes, which would a clerk prefer to show? You know the answer.

VUEPAK Boxes Cut Retail Selling Costs

VUEPAK helps eliminate mistakes. Arguments are prevented because customers see what they are buying. Whenever customers can ***see*** and ***ask*** for a product instead of having to be ***shown*** and ***sold***, there is a real reduction in the time consumed per unit of sale. Better retailers are aware of the importance of knowing their selling costs and are receptive to ideas and products which will reduce selling expense.

Re-use Possibilities of VUEPAK Packages

VUEPAK containers are often designed to provide a re-use value in the home. Hat, shoe and florists' boxes of VUEPAK or with VUEPAK windows are tremendously convenient for the housewife. Food containers, when they have served their original purpose, can be used for coffee, tea, sugar, etc. These re-use values are so appreciated by consumers that frequently VUEPAK containers are used as premiums by both manufacturers and retailers.

Life Red Make-up by Helena Rubenstein in VUEPAK fabricated by Clover Paper Box Company, New York.

XUM

Counter Displays are a growing field for VUEPAK.

Modern Designers Turn to VUEPAK for Telling Displays

Effective display units are vital factors in the sale of many products. The versatility of VUEPAK, the fact that it can be shaped and folded, embossed, stapled, cemented and combined with other decorative materials, have helped to create for it an important place in display work. Though continuously on display, the product is protected from dust and dirt and retains permanently its original freshness and appeal. The best displays are the selling displays. VUEPAK ***sells*** because it shows all the appeal of the product.

Users Form a Roll Call of Industry

VUEPAK is a powerful sales aid to any product which depends on its appearance to help make the sale. Its uses are expanding so rapidly that today it is used in the packaging or displaying of almost every conceivable product sold at retail. This is indicated by the following partial list of the fields in which it is already firmly established:

automobile accessories
cameras
candies
clothing of all sorts
condiments
cosmetics
electrical appliances
flowers
foods
hardware
jewelry
liquors
optical instruments
pens and pencils
playing cards
shaving supplies
smokers' materials and supplies
sporting goods
toys
watches

VUEPAK Fabricating Service

Package fabricators are usually able to provide a genuine service to the inquiring manufacturer. Many fabricators know how to handle VUEPAK to get maximum display value, strength and general utility at moderate cost; in fact, most of the "case histories" described on the following pages have been developed in close collaboration with VUEPAK fabricators.

Monsanto Chemical Company's Plastics Division also maintains an advisory packaging and display construction and design service, and is glad to supply the names of competent fabricators on request.

XUM

23 VUEPAK Questions and the Answers

1. ***What is VUEPAK?***

   VUEPAK is a transparent plastic packaging material—tough, resilient, beautiful. It is made of cellulose acetate.

2. ***Who makes it?***

   Plastics Division, Monsanto Chemical Company, is the sole manufacturer of the VUEPAK transparent packaging material.

3. ***Who makes VUEPAK packages?***

   There are qualified VUEPAK fabricators in every part of the country.

4. ***How thick is VUEPAK?***

   Standard gauges are .003″, .005″, .0075″, .010″, .0125″, .015″, .020″. Thicker sheets available on order.

5. ***What sizes are available?***

   VUEPAK is available in sheet sizes up to 30″ wide in any length, and in continuous rolls 30″ wide and 500 ft. to 1,000 ft. long, dependent on gauge.

6. ***Is it absolutely transparent?***

   With a light transmission factor of better than 95% VUEPAK is the most transparent material available for packaging use.

7. ***Can VUEPAK be obtained in color?***

   The trade name VUEPAK is normally applied only to clear transparent material. Colored cellulose acetate sheets, opaque or translucent, can be obtained in identical gauges in sheets up to a maximum size of 20″ x 50″.

8. ***Does it warp in use?***

   Not if the packages and displays employing it are properly designed and constructed.

9. ***Does the surface show scratches?***

   Not unless abused. Notice the cover of this booklet.

10. ***Is it affected by sunlight?***

    No.

11. ***Is it affected by heat?***

    Not at ordinary temperatures. It begins to soften at about 200°F.

12. ***Has it any odor?***

    VUEPAK is practically odorless and tasteless and is widely used for candies and foods.

13. ***Will VUEPAK burn?***

    VUEPAK is what the Underwriters' Laboratories class as "slow burning." Rate of combustion is slower than newsprint.

14. ***How can it be fabricated?***

    It can be drawn, shaped, formed or folded into almost any shape, by means of inexpensive dies, and combined with paper, cardboards, other plastics, wood, glass, metals, etc.

15. ***Can a VUEPAK container be airtight?***

    VUEPAK containers with seamed-on metal bottoms and tops, equipped with friction plug lids, can be practically airtight.

16. ***Can it be printed on or embossed?***

    Yes, almost anything done with paper can be done with VUEPAK.

17. ***Can it be stapled or cemented?***

    Yes.

18. ***Does it make good re-use containers?***

    Yes, see pages 7, 8, 14, 17, 24, 28.

19. ***Does it make good displays?***

    Yes, see pages 9, 10, 15, 18, 20, 21, 23, 25, 26, 29.

20. ***What are a few of the largest products successfully packaged in VUEPAK containers?***

    Towels, blankets, precision instruments, bakery products.

21. ***What are a few of the smallest?***

    Cosmetics, jewelry, watches.

22. ***What effect do VUEPAK containers have on the returned goods evil?***

    Returned goods are practically eliminated because products in VUEPAK retain their original freshness and can be thoroughly examined without handling and consequent soiling.

23. ***Where can I get additional specific information?***

    Consult your fabricator or Plastics Division, Monsanto Chemical Company, Springfield, Massachusetts.

★The Bachman VUEPAK display containers won a major award in the Rigid Transparent Containers Group of the All-America Package Competition sponsored by MODERN PACKAGING Magazine.

The Product

PRETZELS—manufactured by Bachman Bakeries, Inc., Reading, Pa. One container carries bulk, the other special penny pretzels.

The Market

National. Sold through grocery stores, supermarkets, syndicate stores, tap rooms, etc.

The Old Container

Formerly this company used a standard pretzel can. For display, a glass cover was fitted over the top and the can placed on a rack. Visibility of the contents was limited, and the glass cover was subject to breakage.

Reasons for New Package

To obtain greater visibility and display.

The VUEPAK Container

The new display containers are imprinted cylinders of rigid transparent VUEPAK, crimped to metal bases and reinforced at the top by metal rings. The removable top is of light, colored metal, with a convenient grip for easy lifting. They are packed 24 to the carton, plus pretzels in bulk.

Advantages

The crystal clear transparency and handsome lettering of the new VUEPAK display container obtain display positions in stores. Retailers report an "astonishing sales increase." Of particular interest is the increased volume of penny pretzel sales. The container is sturdy and can be used as a permanent display, always assuring customers of clean, factory-fresh pretzels.

Credits

For design	*For fabricating*
Mr. Arthur T. McGonigle	Geo. V. Clark Co.
Bachman Bakeries, Inc.	Long Island City
Reading, Pa.	New York

XUM

The Product

A Set of Special Soap, Selected Sponge and One Jar of "Treatment Complete:" Manufactured by Maria Danica, Inc., New York. Maria Danica's treatment is claimed to employ the secret that makes Danish women famous the world over for their lovely, fresh complexions. The retail price of the unit is $2.50.

The Market

Distribution is national, through department stores and high class specialty shops.

The Old Package

Formerly the "Treatment Complete" was packaged in an opal jar bearing a green label. The container was attractive but did not afford a view of the several individual units.

Reasons for New Package

A package in keeping with the quality of the treatment was wanted. It had to provide adequate protection and give a complete view of the product.

The VUEPAK Container

The new Maria Danica box consists of a VUEPAK top and cardboard bottom with a gold foil label. Design is such that the soaps, sponge and jar of treatment are all visible. The container complete with contents weighs 8 oz. and is packed for shipment in units of one dozen.

Comparative Costs

Not available.

Advantages

Buyers everywhere have unanimously approved the new Maria Danica box. The handsomely printed, rich black and gold label is given added life by the gleaming transparent VUEPAK cover. Customers can see the "Treatment Complete" at a glance without touching the box or removing the cover. Sales have been definitely stimulated.

Credits

For design	*For fabricating*
Maria Danica, Inc. 100 Fifth Avenue New York, N. Y.	A. Dorfman Company 57 West 19th Street New York, N. Y.

Remarks

An added selling feature is the re-use value of the package. After it has served its original purpose, buyers employ it to hold handkerchiefs, sewing materials, artificial flowers, etc.

XUM

★Wright's VUEPAK display won a major award in the Counter and Shelf Displays Group of the All-America Package Competition, sponsored by MODERN PACKAGING Magazine.

The Product

RUFFLING AND TRIMMING: Manufactured by Wm. E. Wright & Sons Company of West Warren, Massachusetts. Retail prices range from 5 to 20 cents a yard.

The Market

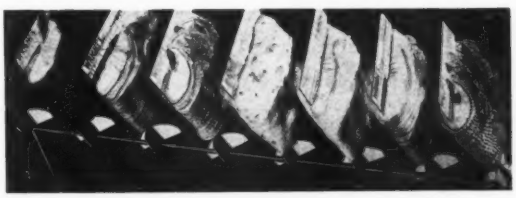
National. For over forty-five years Wright's products have been sold by department, dry goods and notion stores.

The Old Display

Ruffling and Trimming were previously displayed on open metal frame put-ups, similar to the ones illustrated at the bottom of this page.

Reasons for New Display

Manufacturer required visibility of merchandise with better protection against dust, dirt and handling. Easy dispensing and assembly of put-ups were also essential.



The VUEPAK Display Container

Now ruffling is packed in transparent .005" or .0075" gauge VUEPAK containers. The container affords complete protection against dirt, soiling and handling, but permits perfect display. Clerks pull out and measure the merchandise through a slot in the package. These individual containers are mounted in tiers on metal frames for counter display.

Comparative Costs

The VUEPAK container compares favorably in cost with the old style exposed put-up.

Advantages

The VUEPAK display—"the most effective and popular yet designed"—is clean, compact and gives complete visibility. The ruffling is exposed only as bought and retailers can see just what stock is on hand at all times. Stores may choose their own ruffling assortment as well as their own put-up displays, which come in several sizes from 12 to 24 pieces each. A bright future is indicated as volume sales to retailers are being realized for the first time.

Credits

For design	*For fabricating*
John T. Wright	National Transparent
Wm. E. Wright & Sons Co.	Box Co., Springfield, Mass.
West Warren, Mass.	Royal Transparent Container Corp., Leominster, Mass.

XUM

The Product

KIRSTEN PIPES: An unusual, new type pipe embodying (according to the maker) principles applied to airplane construction. Manufactured by The Kirsten Pipe Company, Seattle, Washington. Retail prices range from $10.00 to $17.50 for pipes; $3.00 for cigarette holder.

The Market

National. Kirsten pipes are sold by high-grade tobacconists and specialty shops.

Reasons for Display

The manufacturer wished to obtain prominent position for his product in windows and on the counters of stores. The display had to reflect in its own perfection the sleek, modern lines of the pipe and be in keeping with the high quality and premium price of the product.

The VUEPAK Display

The display, oval in shape, is made of heavy gauge transparent VUEPAK, reinforced and trimmed with silver-colored acetate rods. The pure white base serves as a panel upon which are mounted 4 Kirsten Pipes and one cigarette holder. Displays are packed and shipped singly.

Advantages

The transparent VUEPAK exhibits the merchandise in all its modern beauty and helps to create a feeling of ultra-fine beauty. The VUEPAK can be easily formed to the desired shape, and its light weight and freedom from breakage have materially reduced shipping expense. It is being very favorably received by the trade and is having a stimulating effect on sales volume.

Credits

For design and fabricating
Joseph H. Meyer Bros.
220—25th Avenue
Brooklyn, New York

XUM

The Product

★ This package won a major award in the Rigid Transparent Containers Group of the 1940 All-America Package Competition, sponsored by MODERN PACKAGING Magazine.

TOOTH BRUSHES: Manufactured by the Pro-phy-lac-tic Brush Company, Florence, Massachusetts. The standard retail price is $.43.

The Market

INTERNATIONAL. Pro-phy-lac-tic brushes have been advertised and sold for over 30 years in every country in the world. Drug stores and department stores are the main outlets.

The Old Package

The old package was a cardboard carton with a small cellophane window affording a very restricted view of the bristle part of the brush.

Reasons for Redesigning

Buyers wish to see the entire brush before purchasing, which formerly was impossible without breaking the sealed carton. Handling the brush was unsanitary and often caused losses, and unfair claims for damaged and shop-worn goods.

The VUEPAK Package

The new package consists of a cardboard base, a curved section of .005″ gauge VUEPAK, designed to hold the brush rigidly to the base, and sealed at both ends. The package, complete with brush, weighs .53 oz Shipping units are dozens and grosses.

Comparative Costs

The new package is slightly more expensive.

Advantages

The clean, sanitary package has far greater sales appeal. The crystal clear VUEPAK and the rich maroon lettering on the gold base give an atmosphere of richness and cleanliness in keeping with the quality of this nationally known product. Customers can see the entire brush from any angle.

Credits

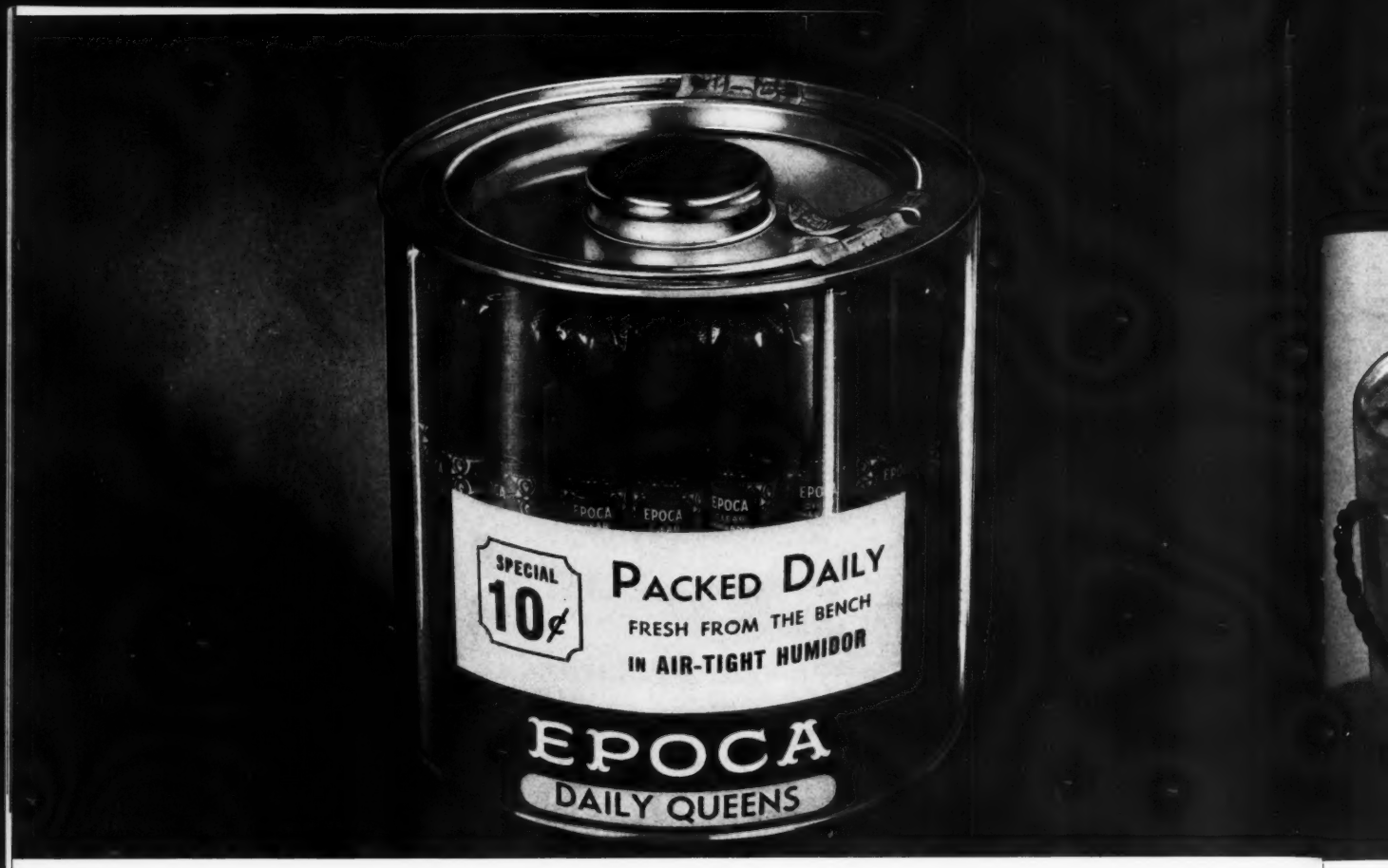
For design and fabricating	*For cardboard bases*
Pro-phy-lac-tic Brush Company Florence, Mass.	The Sample-Durick Co. Myrtle St. Springfield, Mass.

Remarks

One of the outstanding features of this package is that special fully automatic machinery was developed by the Pro-phy-lac-tic Brush Company, which fabricates the carton, inserts the brush and seals both ends of the container.

THIS FAMOUS TUFT
ACTUALLY REACHES PLACES IN YOUR MOUTH NEVER TOUCHED BY ORDINARY TOOTH BRUSHES
Pro-phy-lac-tic
ROUND END
BRISTLE SEALED INTO THE HANDLE BY PERMA-GRIP
A NEW Pro-phy-lac-tic INVENTION.

XUM



The Product

CLEAR HAVANA CIGARS. These cigars, manufactured by Schwab Bros. & Baer, Inc., 25-33 West 18th Street, New York, are sold under the brand name "EPOCA DAILY QUEENS" and retail at 10 cents each.

The Market

Metropolitan New York and surrounding territory. Distribution through tobacconists, drug stores, etc.

The Old Package

A tin box of the same general shape.

Reasons for New Package

To obtain top-counter position, and thus increase sales through increased visibility.

The VUEPAK Package

Top and bottom are of tin joined by a cylinder of .010" gauge VUEPAK. The package is airtight, thus protecting the contents indefinitely. When opened a small sponge inserted in the removable lid can be moistened to make a permanent humidor of the original container, thus preserving the freshness of the contents right to the moment of sale or use.

Comparative Costs

Not available.

Advantages

The light weight attractive package, displaying but protecting its contents, wins counter position. Patents pending on several features of the package will allow the manufacturer to control the use of the package, and thus help protect the good will which the quality of his product enjoys. Success of the original package of 50 cigars has prompted the development of a smaller package of 25.

Credits

For design	*For fabricating*
August Baer	Geo. V. Clark Co.
Schwab Bros. & Baer, Inc.	Long Island City
New York	New York

XUM

The Product

AFTER-SHAVE LOTION. Men's Cologne and Talcum Powder: Called the "Triplex Set for Gentlemen." Manufactured by The Erasmic Company, Ltd., of Warrington, England, and imported by Miramar Trading Corp. of New York. The retail price is $2.50.

The Market

National. The Triplex Set is sold by drug stores, department stores and specialty shops.

Reasons for New Package

The manufacturer wanted an appealing display package which would receive real display by retailers, thus increasing sales.

The VUEPAK Package

The VUEPAK display package is rectangular in shape, made of rigid transparent VUEPAK cemented to an imprinted pasteboard base. The approximate weight of each package is 2 lbs., and they are packed 12 to the carton.

Advantages

The new VUEPAK package gives a clear view of all three products, at the same time protecting them from exposure and handling. The new package, because of its visibility, automatically wins counter display space. Sales, according to the manufacturer, are "far better than most optimistically anticipated."

Credits

For design

Miramar Trading Corp.
151 Varick Street
New York, N. Y.

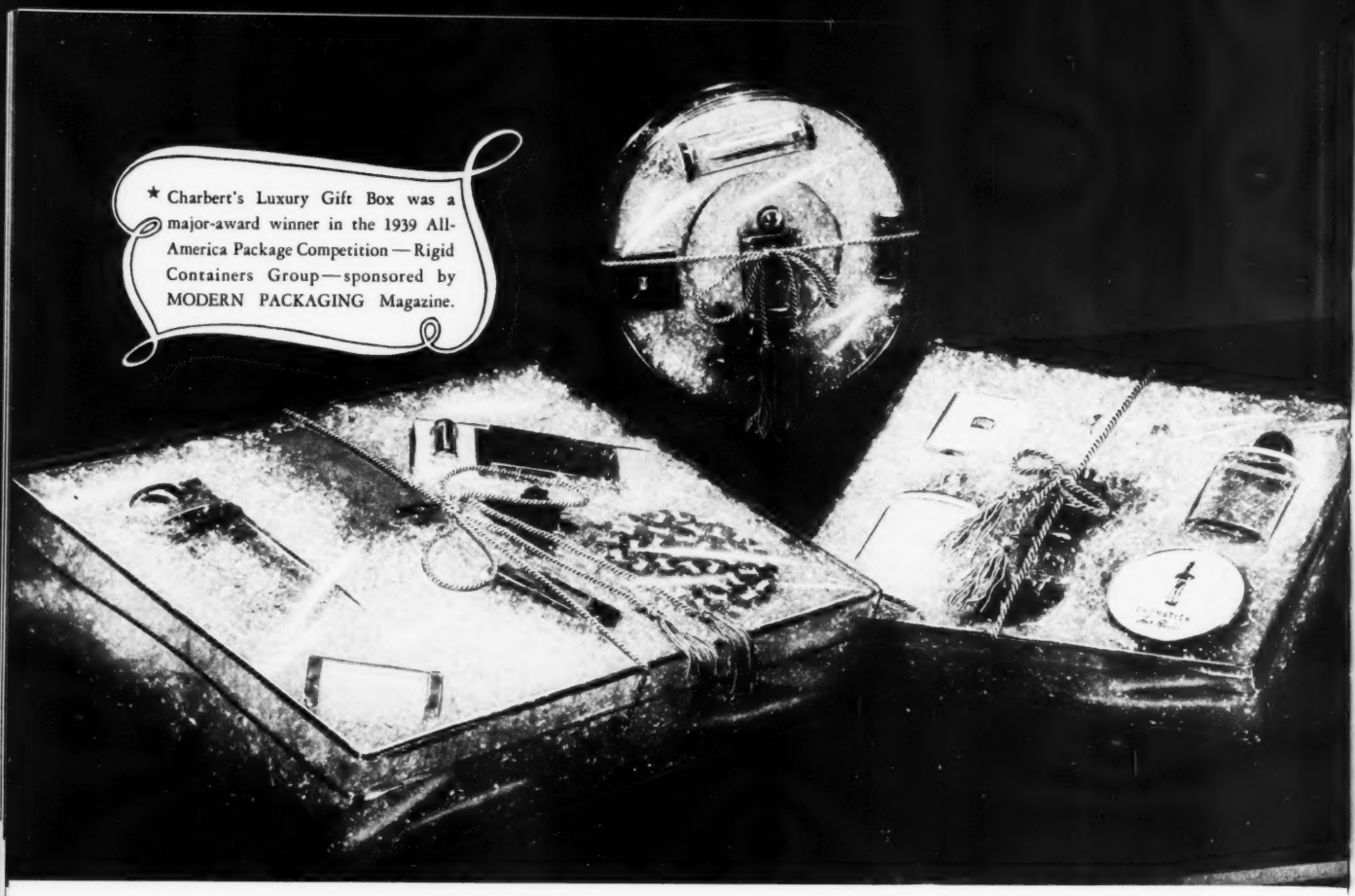
For fabricating

Clover Paper & Transparent Boxes, Inc.
44-02—23rd Street
Long Island City, N. Y.

For printing

L. A. Liebs
312 East 23rd Street
New York, N. Y.

XUM


★ Charbert's Luxury Gift Box was a major-award winner in the 1939 All-America Package Competition — Rigid Containers Group — sponsored by MODERN PACKAGING Magazine.

The Product

LUXURY GIFT ASSORTMENTS OF FAMOUS COSMETICS: Manufactured by Parfums Charbert, Inc., of New York. Retail prices are $10, $20, and $30.

The Market

Charbert's gift assortments are designed to sell to well-to-do women living in metropolitan areas throughout the country. Distribution is through high class department stores.

Reasons for Package

Appearance is such an important factor in the sale of a luxury product that the manufacturer desired to use every means to enhance the attractiveness of his product. VUEPAK was a natural choice, particularly as it afforded the added advantage of providing a re-use container of permanent value.

The VUEPAK Package

Charbert's new VUEPAK box is fabricated of VUE-PAK reinforced with gold colored plastic rods. The cover is also of VUEPAK similarly reinforced. It is held in position with a gold silk cord which harmonizes with the rods. The box, complete with contents, weighs approximately four pounds and boxes are shipped in single units.

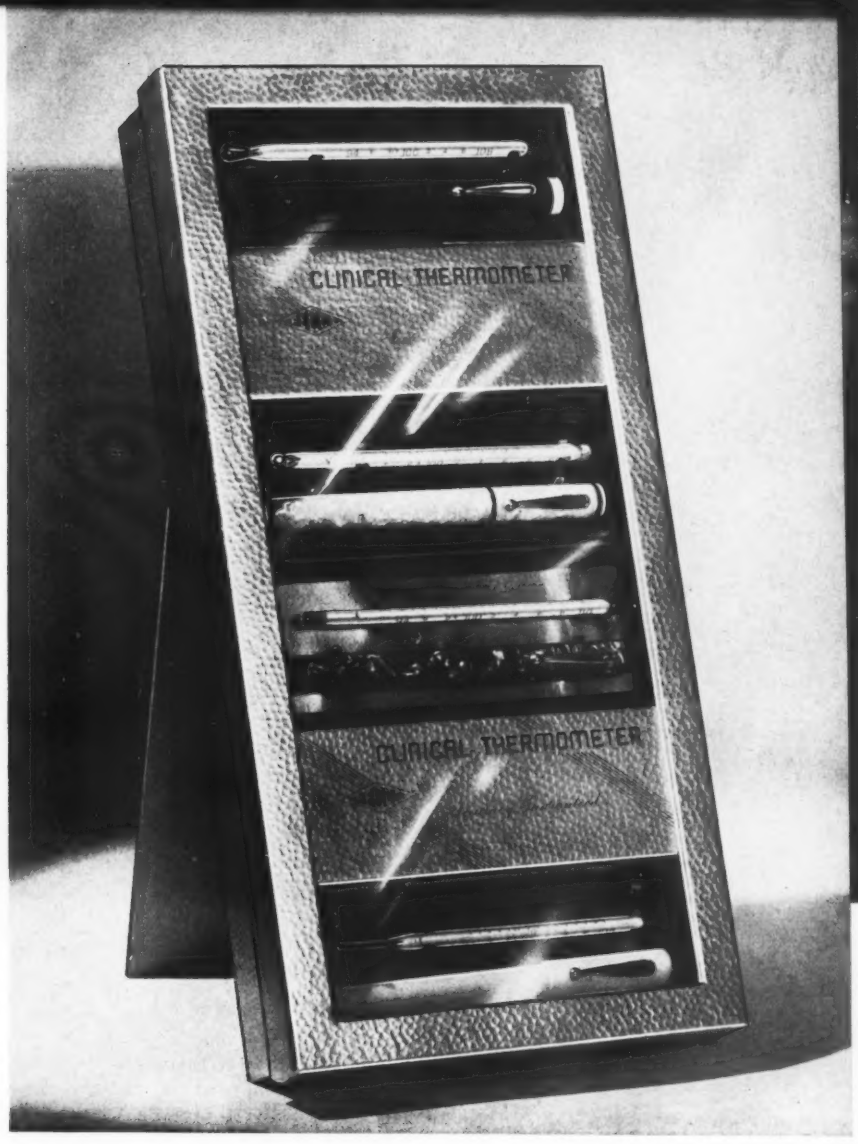
Advantages

The luxury gift set presents three practical assortments of cosmetics beautifully displayed on transparent shredded cellulose acetate in a rigid VUE-PAK box. The exquisite design and appearance, plus the permanent re-use value, such as a jewelry box or powder box, have increased sales far above anticipation and the boxes are always given prominent display positions by retailers.

Credits

For design	*For fabricating*
Herbert H. Harris	Jos. H. Meyer Bros.
New York	220—25th Street
N. Y.	Brooklyn, N. Y.

XUM



The Product

CLINICAL THERMOMETERS: Manufactured by the Pecorella Manufacturing Company of Brooklyn, New York, and sold under the trade name "Pecco." The standard retail prices are $1.25 and $1.75.

The Market
National. Sold through drug, surgical, supply and department stores.

The Old Package
This company formerly used a display package consisting of a panel carrying eight thermometers, which was raised from the container and supported in display position by the lid.

Reasons for New Package
To obtain increased sales through better display. The new package gives added prominence to the product and its carrying case and capitalizes on sanitary atmosphere that is important with a product of this type.

The VUEPAK Package
The new display package consists of a gold colored board box with a VUEPAK window, through which can be seen the individual thermometer boxes. The thermometers and their cases are held in place on a colored metallic board within each box by means of four metal spring clips. Each display package contains 12 individual thermometer packages and weighs 1 lb., 6 oz.

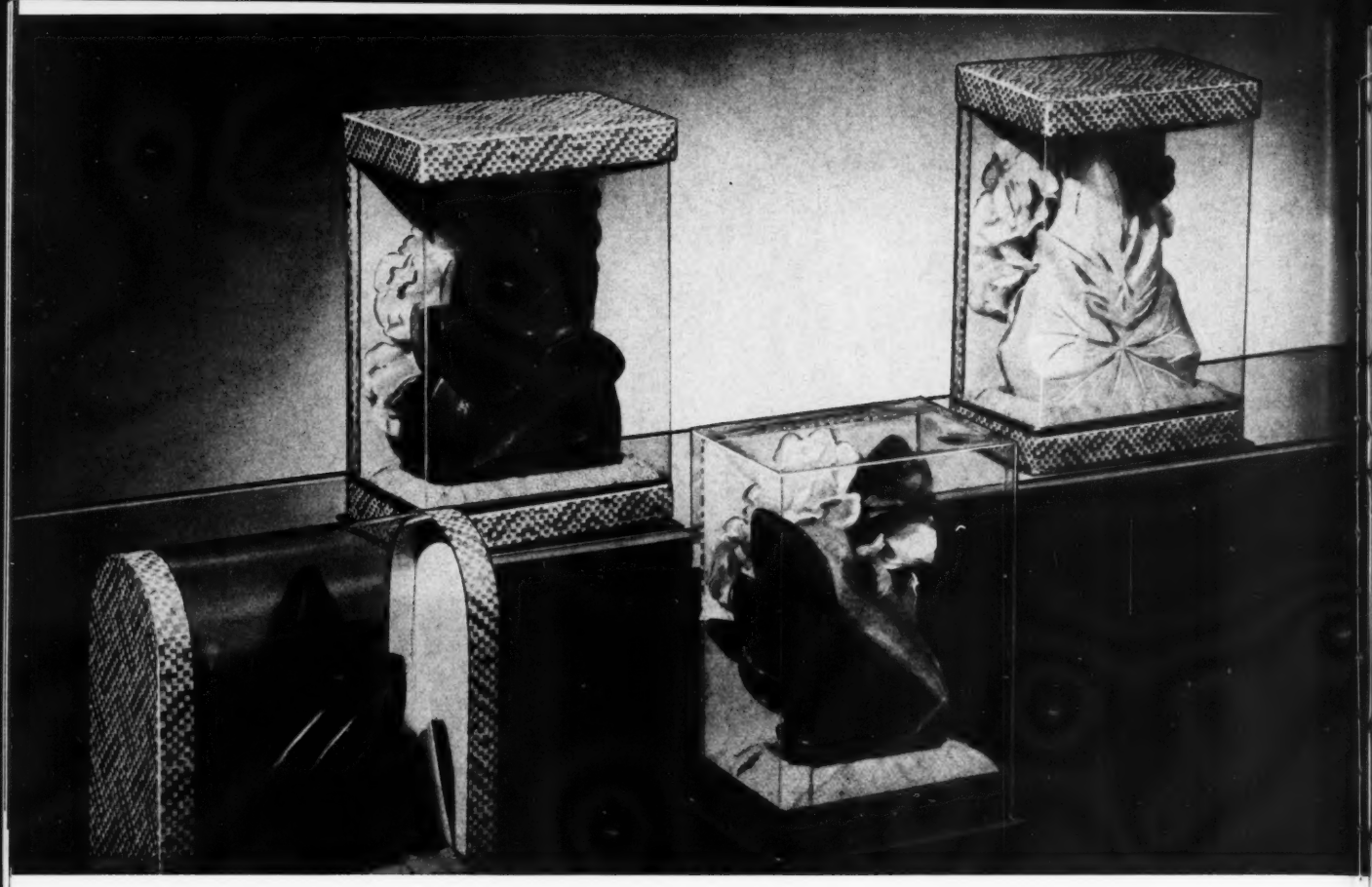
Comparative Costs
The new "Pecco" display is slightly higher in cost.

Advantages
The neat, compact display is attractive, yet dignified. The VUEPAK window permits a free, unobstructed view of the individual thermometers. The effect of the new design is already being felt in stimulated sales.

Credits

For design	*For fabricating*
Peter J. Pecorella	Knickerbocker Paper Box Co.
64 Stanhope Street	9-15 White Street
Brooklyn, N. Y.	Brooklyn, N. Y.

XUM



The Product

PERFUMES: Hula-Lei perfumes are manufactured in Honolulu, Hawaii, and imported by Trans-Pacific Importers, Inc., of Los Angeles, California. Retail prices are $3.00, $5.00 and $7.50 per unit.

The Market

The Pacific Coast and The Southwest. Distribution is through department stores and drug stores.

The Old Package

The former Hula-Lei packages were ordinary pasteboard slip-cover boxes with a Tapa Cloth design in paper. The perfume containers could not be seen.

Reasons for New Package

The manufacturer wished the added sales advantage of showing the beautiful carved wood bottles, which was impossible with the old package.

The VUEPAK Package

The VUEPAK packages are basically slip-cover boxes of rigid transparent VUEPAK. They are built in several shapes according to the individual, carved bottles. The base and trimming on the VUEPAK is of cardboard covered with a specially designed paper which simulates a native woven mat. The base contains a tray covered with a woven cotton material, also simulating a native fabric, on which the perfume bottle is mounted. Vivid colored imitation Hawaiian flowers are used as a background. The weight is from 6 to 12 oz. Each unit is packed separately.

Comparative Costs

The VUEPAK package is approximately three times more expensive than the old slip-cover box.

Advantages

The fabric-like texture of the paper plus the glistening transparent VUEPAK, creates a quality appeal in keeping with the product. The beautifully carved bottles are shown to full advantage, yet they are protected against exposure and handling. Favorable reception by the trade indicates great potential value as a sales builder.

Credits

For design	*For fabricating*
Leonard Wheeler	Hersee Company, Inc.
Allied Advertising Artists	910 E. 60th Street
719 So. Flower Street	Los Angeles
Los Angeles, California	California

The Product

"CAPSULCREAM:" A facial cream put up in capsules, each capsule containing sufficient cream for one complete application. To use, the end of the capsule is snipped off and contents squeezed into the hand and applied. The manufacturer is Margaret Brainard, Inc., New York. Retail price is $1.00 for a box of 30 capsules.

The Market

"Capsulcream" is sold nationally through department stores and drug stores.

The Old Package

"Capsulcream" has not been previously marketed in its present form. A similar product, known as "Capsufacial" was sold in conventional jars at a retail price of $5.00.

Reasons for New Package

"Capsulcream" in individual capsules is a new idea in merchandising facial cream. Complete visibility was desirable to display the idea properly.

The VUEPAK Package

The new container is cylindrical in shape and made entirely from transparent VUEPAK. Removable transparent discs of VUEPAK divide it into three layers, each holding 10 capsules. The cover is attractively printed in gold.

Comparative Costs

The cost of the "Capsulcream" VUEPAK container is 3½ cents against 12c for the older package.

Advantages

The VUEPAK container displays the product without exposing the individual capsules to handling. Its rich simplicity creates a feeling of ultra-fine quality. The effectiveness of the package is indicated by the report that the product is showing considerable increase in sales.

Credits

For design	*For fabricating*
Margaret Brainard, Inc. 1841 Broadway New York, N. Y.	Hygienol Co., Inc. 120 W. 42nd Street New York, N. Y.

Remarks

An important advantage of this package is its re-use value. It makes an excellent container for face powder and powder puff.

The Product

"Vi-Delta" Emulsion, "Vi-Delta" Concentrate for Infants and "Vi-Delta" Capsules for Adults. "Vi-Delta" products are manufactured by Lederle Laboratories, New York, and contain Vitamins A and D. Retail prices range from $.75 to $2.25, according to form and size.

The Market

National. Through drug stores.

The VUEPAK Display

The "Vi-Delta" counter display is a streamlined, jewel-like case made from a lacquered metal and plastic base with a drawn domed cover formed from .020" gauge VUEPAK. It is arranged for special illumination. It carries samples of all three "Vi-Delta" products and weighs, with contents, approximately three pounds.

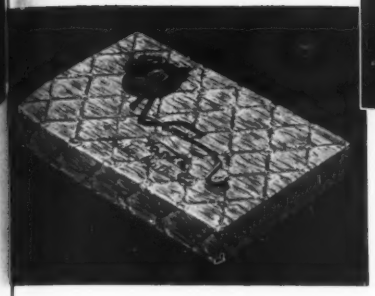
Advantages

The display is compact, attractive and obtains good space in any store. Its outstanding shape and illuminated interior assure customer attention. Breakage in transit is eliminated and shipping costs are less due to light weight. The domed cover is easily formed with inexpensive dies. As "Vi-Delta" is a new product, so far as consumer sales are concerned, there is no comparison with past records. Reports from the company's salesmen indicate a favorable reception by the trade. The company reports sales as "very good indeed."

Credits

For design and fabricating
Design Center
351 West 42nd Street
New York, N. Y.

★"Vi-Delta's" illuminated counter display has been chosen by MODERN PACKAGING Magazine as one of the outstanding exhibit cases of 1939.



The Product

"Vanta" Bunny Bath Kit Gift Box, consisting of a "Vanta" Baby Towel and Washcloths, is manufactured by the Earnshaw Knitting Company of Newton, Massachusetts. The retail price is $1.00.

The Market

"Vanta's" market is national. Distribution is through department stores and similar retail outlets.

The Old Package

Previously "Vanta" packaged its Baby Bath Kit in a regular set-up cardboard box covered with lithographed label, base and lid. The contents, of course, were not visible.

Reasons for Redesigning

The primary objective was to secure visibility for the contents. Also, the product had to be adequately protected from dust, dirt and handling and form an appealing feminine package display.

The VUEPAK Package

The new "Vanta" VUEPAK package consists of a pasteboard tray or box with a raised cover of .0075" gauge VUEPAK on which is printed the "Vanta" name and Bunny design. The color scheme of the tray is in keeping with the "pink and blue" baby atmosphere. The whole package, with contents, weighs 5½ oz. "Vanta" Baby Kits are packed in units of six for shipping purposes.

Comparative Costs

The cost of the new package is 20% higher.

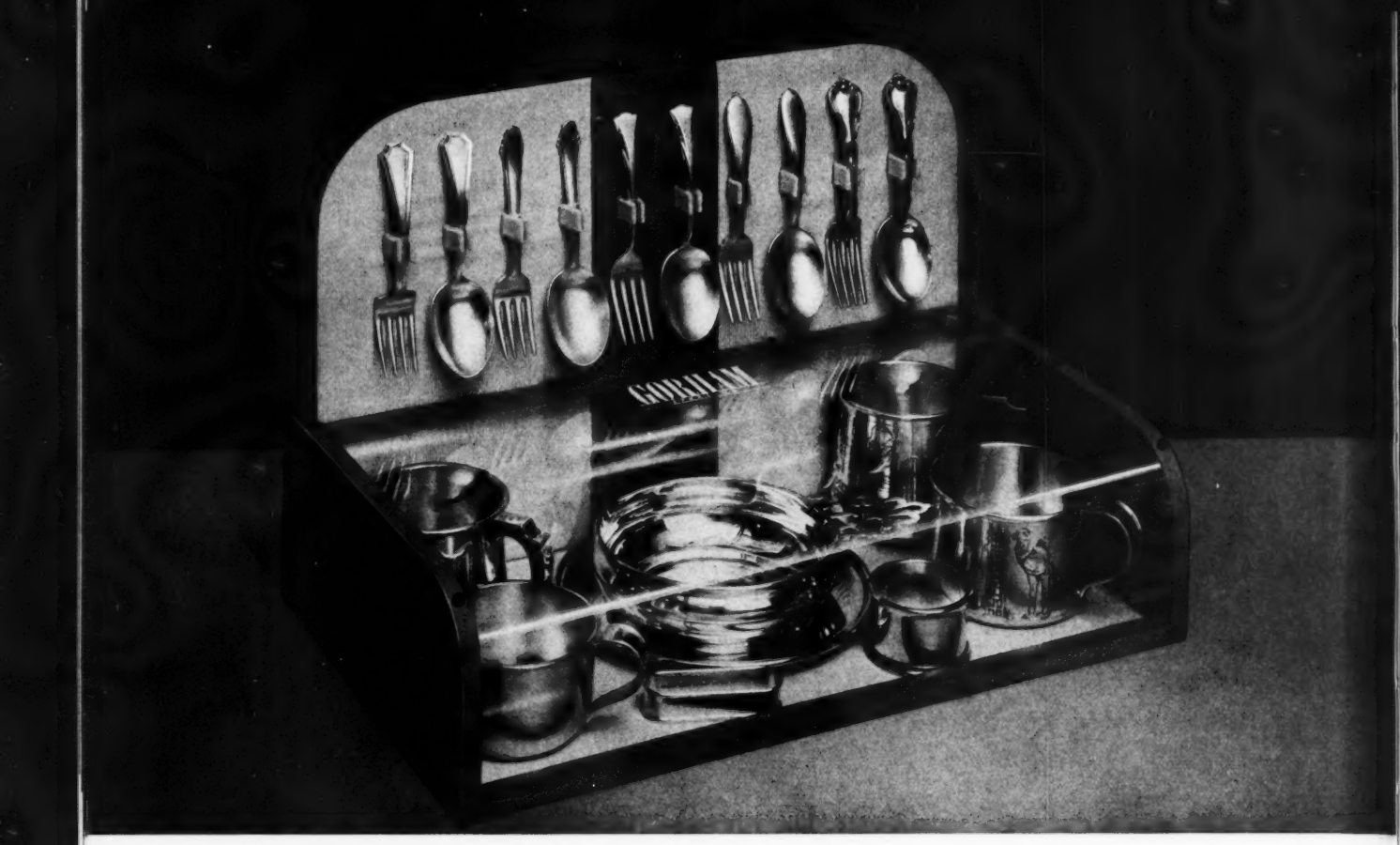
Advantages

The dainty design and crystal clear VUEPAK cover of the new "Vanta" package displays the Baby Kit in all its feminine appeal. The contents can be thoroughly examined without handling, thus cutting losses due to soiling to nothing. As this is written, the package has just been introduced to the trade, but its favorable reception indicates a rapid acceptance throughout the country.

Credits

For design	*For fabricating*
Mr. A. Moberger	Cambridge Paper Box Co.
Cambridge Paper Box Co.	Cambridge
Cambridge, Mass.	Massachusetts

XUM



The Product

STERLING SILVERWARE: Manufactured by The Gorham Company, Providence, Rhode Island. The unit is a special display case devoted to baby goods, both Flatware and Hollow Ware.

The Market

National. Sold through jewelry stores, department stores and certain specialty shops.

Reasons for Display

To promote sales of a certain part of the company's line by obtaining better display and better counter position, plus increased dealer cooperation.

The VUEPAK Display

The blue-wood base and sides are lined with cream-colored corded silk, as is the movable back panel. A curved section of imprinted VUEPAK protects the Hollow Ware and gives the entire display its atmosphere of style and beauty. 5 spoons and forks are mounted on the rear panel and the various pieces of Hollow Ware displayed inside. The display and contents are sold as a complete unit.

Advantages

The transparent VUEPAK effectively displays and protects the Hollow Ware whose beauty and color are enhanced by the harmonious color scheme of the whole display. The compactness and beauty combine to guarantee good display positions. No special promotion is being done, but more than 20 cases are being placed each month. By selling silverware and display as a unit, the manufacturer avoided several disadvantages formerly encountered with similar merchandise.

Credits

For design	*For fabricating*
The Gorham Company	Rueckert Mfg. Company
Providence	Providence
Rhode Island	Rhode Island

The Product

CANDY: Reed's Butter Scotch Rolls, manufactured and sold by Reed Candy Company, 1245 Fletcher Street, Chicago, Ill. Retail price 5c per roll.

The Market

National. Reed's Butter Scotch Rolls are sold by many types of retailers, particularly drug and candy stores, tobacconists, restaurants and food shops.

Reasons for Display

This manufacturer wished to obtain more display for his attractively packaged product and to get better counter position.

The VUEPAK Display

The display contains 24—5c Rolls, individually wrapped pieces. The display itself consists of a stiff gold finished cardboard base with a folding flap, carrying name and price, which is raised when the display is in use. Front, back and sides are of .0075" gauge VUEPAK beaded and folded at the top for reinforcement and stapled on the bottom to the cardboard base. The top of the display is open to provide easy self-service. For shipping purposes the flap folds down and the whole display slips into a folding carton as shown in the illustration.

Comparative Costs

Slightly higher than formerly.

Advantages

The display is so attractive that retailers keep it in continuous use, replacing the individual rolls as they are sold. It affords a better view of the product and has the appeal of novelty. The manufacturer reports both jobbers and retailers like the display unit which has been given the trade marked name "VISI-PAK" and that their sales have greatly increased. It is worth noting that this display package was thoroughly tested in selected outlets where results were so good that it was permanently adopted.

Credits

For design and fabricating

W. C. Ritchie and Company
8855 Baltimore Avenue
Chicago, Illinois

XUM

The Product

LIQUORS: By Seagram-Distillers Corporation, New York. A Luxury Gift Box containing bottles of Seagram's Crown Whiskey, Seagram's V. O. Whiskey, Seagram's Ancient Bottle Gin.

The Market

National. Sold by liquor stores, package stores and other stores with liquor departments.

Reasons for Package

To effect distribution of a new product, "Seagram's Ancient Bottle Gin," by selling it along with two other well-known Seagram's products.

The VUEPAK Package

The VUEPAK package is made of rigid, transparent VUEPAK, trimmed and reinforced with acetate rods. The merchandise and a rolled parchment greeting rest in transparent shredded cellulose acetate. The package is tied with a large red silk ribbon and is supplied with an easel stand for display purposes. The package complete weighs about 9 lbs. and is packed for shipment in individual corrugated containers.

Cost

The complete gift box costs about 80c per unit.

Advantages

The gift package helped tremendously in getting rapid distribution of the new product as planned, and at the same time increased volume materially on the other two products.

Credits

For fabricating

Wallace Paper Box Corporation
609 West 51st Street
New York, N. Y.

XUM

The Product

WATCH STRAPS: The American Strap Company sells a complete line of beautifully designed leather watch straps for men, under the trade name "Esquire." Retail price per strap, $2.00.

The Market

National. Distribution is through jewelry stores.

The Old Package

An ordinary cardboard package without display value, which retailers kept on the shelves.

Reasons for New Display Package

To give the public a chance to compare colors, types of leather and various designs in the company's line. Also to help maintain a unit cost for the items which would enable the manufacturer to give the display free as part of a "deal."

The VUEPAK Display

The "Esquire" watch strap display consists of a cardboard box higher at the back than the front and covered with tastefully decorated paper. A .0075" gauge VUEPAK panel in the slanting top provides display for 12 watch straps, each held in place by thin elastic retainers. Extra space in the base of the display box provides room for individual gift boxes and additional stock.

Advantages

Comparative display is obtained. Sales are easier and quicker. The merchandise is protected from dust, dirt and pilferage. The general attractiveness of the display gains good counter location.

Credits

For design	*For fabricating*
Norman Cohen Merit Display Card Co. New York, N. Y.	Merit Display Card Co. 36 West 20th Street New York, N. Y.

XUM

The Product

PEANUT BUTTER, AND PEANUT BUTTER AND CHEESE SANDWICHES: Manufactured by the Austin Packing Company, Inc., Baltimore, Maryland. Each container carries an equal number. The sandwiches, 5 to a transparent-wrapped package, are packed in a largeVUEPAK container. Retail price, 5 cents per package.

The Market

National. Sold by grocery stores, markets, syndicate stores, restaurants and soda fountains.

Reasons for New Container

To obtain counter display space for this company's product under very competitive conditions.

The VUEPAK Container

The new display container is an imprinted cylinder of rigid transparent VUEPAK, crimped to a metal base and reinforced at the top with a metal ring. A removable cover of light, colored metal has a convenient grip for easy lifting.

Advantages

The crystal clear transparency of the new VUEPAK container displays the product perfectly and obtains prominent display positions everywhere. The manufacturer reports it has "increased distribution 400%," and that it is proving to be a "good sales stimulator." The container is strong and sanitary and is used as a permanent fixture by the retailer.

Credits

For design	*For fabricating*
Geo. V. Clark Company Long Island City New York	Geo. V. Clark Company Long Island City New York

The Product

HOLLOW WARE: "Kiddie Cups," silver cups for children, manufactured by Wm. Rogers & Son, Division of International Silver Company, Meriden, Connecticut. "Kiddie Cups" retail for $1.00 each.

The Market

National. Sold through jewelry stores, department stores, children's shops and other retail outlets.

Reasons for Display

To encourage retail outlets to get the product out where the public can see it, to enhance its beauty and to protect it against the tarnishing that results from handling silverware.

The VUEPAK Display

The unit consists of a carton containing six individually packed cups and a folding panel, which when open forms a background for the cups, each in its individual container, as illustrated above. The gaily designed containers are of folded cardboard, with one flap forming the top and front. VUEPAK is used in the flap of these individual containers to permit visibility of the contents.

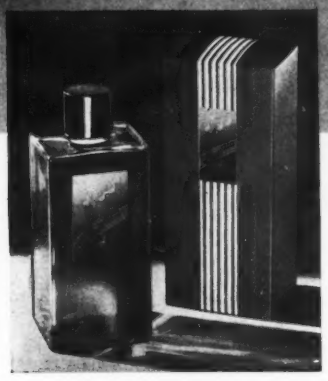
Advantages

All silverware, as everyone knows, has a beauty of surface which is one of its greatest selling features. But it tarnishes quickly, particularly when handled. The VUEPAK containers not only permit complete visibility for the "Kiddie Cups," but actually enhance their beauty, due to the sparkling effect given by the VUEPAK. Even more important, the protection from handling keeps them fresh and attractive without the trouble and expense of continued polishing. Obviously, also, the design of the whole unit encourages display and increases sales.

Credits

For design	*For fabricating*
Wm. Rogers & Son	Sherwood Packages
Meriden	83 Laurel Street
Connecticut	Hartford, Connecticut

XUM



The Product

COLOGNE: Manufactured by Daggett & Ramsdell, New York, creators of beauty preparations. Retail price is $1.00.

The Market

National. Daggett & Ramsdell's Cologne is sold in department stores and drug stores everywhere.

The Old Display

The old display consisted of a standard set-up cardboard carton, modernistically printed, containing the glass cologne bottle.

Reasons for New Display

A daintier, more feminine display was wanted—one which would show the product to its fullest advantage and stimulate "impulse" buying.

The VUEPAK Display

The new VUEPAK display is a transparent slip-cover box made from die-stamped .0075″ gauge VUEPAK. The unit contains the gracefully shaped bottle of cologne and an atomizer positioned in a hollow cardboard tray. The weight of the complete display is 14 oz. It is packed singly or in units of 12 at purchaser's option.

Comparative Costs

Comparative costs are not available.

Advantages

The transparent VUEPAK cover displays the dainty bottle and atomizer in all its delicate feminine charm and permits a complete view of the product without exposing it to dust, dirt and handling. The effectiveness of the VUEPAK display is already being felt in the form of marked sales increases.

Credits

For design	*For fabricating*
E. W. King	Wallace Paper Box Corp.
1 East 53rd Street	609 West 51st Street
New York, N. Y.	New York, N. Y.

The Product

GIFT PACKAGE OF MILITARY BRUSHES: Manufactured by John Hudson Moore, Inc., formerly London House, Ltd., New York. Retail prices of the brushes range from $10 to $50 a pair.

★ The London House Gift Package received Honorable Mention in the Set-Up Paper Box Group of the All-America Package Competition sponsored by MODERN PACKAGING Magazine.

The Market

London House Military Brushes are sold nationally through high class drug stores, toilet goods and men's departments of department stores.

The Old Package

The former package was a decorated board box shaped like a book and entitled "*'Good Grooming' by London House.*" The color was maroon, lined with gold paper, lettered in gold.

Reasons for New Package

The manufacturer makes a practice of bringing out a new package each year for merchandising purposes.

The VUEPAK Package

The new London House gift package is a cardboard box with a slotted cover through which passes a curved handle attached to a cardboard tray holding the brushes. The cover is easily lifted for display purposes, and customers see the brushes resting on their sides, held in place by rigid transparent VUEPAK attached to the base.

Comparative Costs

The new package is 23% more expensive.

Advantages

London House, Ltd., state that the new package is the most effective ever used, since it makes it possible to show completely the back and the bristles of the brush. The transparency of the VUEPAK and novelty of shape and color—closed and open—make this package outstanding as proved by its favorable reception in the trade and by increased retail sales.

Credits

For design	*For fabricating*
Everett W. King New York, N. Y.	Shoup-Owens Hoboken, N. J.

XUM

The Product

ORANGE PEKOE TEA: put up in individual ready-to-use tea bags by the Krasdale Food Stores, Inc., Bronx, New York.

The Market

National. Krasdale Tea Bags are sold by grocery and food shops throughout the country.

The Old Package

The old package was an ordinary tin container.

Reasons for New Package

The company believed a more attractive display would influence the retailer to place tea bags on the counter instead of the back shelf. Sanitation and convenience in merchandising were also factors.

The VUEPAK Package

The new container is cylindrical in shape, made of heavy gauge transparent VUEPAK, reinforced with riveted paper rings and paper board at the top and bottom. A rubber band fastened to eyelets makes an easily replaceable handle.

Comparative Costs

There are no comparative costs available.

Advantages

The new VUEPAK container gives complete visibility of both product and brand name. Its glistening transparency has so enhanced the appeal of the product that grocers now find it profitable to keep the container on the front counter in full view of customers. Many grocers report that there has been a "tremendous sales increase in this brand" since VUEPAK was adopted.

Credits

For design	*For fabricating*
Irving K. Rotwein Cleveland Container Co. New York, N. Y.	Cleveland Container Co. 601 West 26th Street New York, N. Y.

Remarks

The new VUEPAK container, because of its rugged construction, is often used by grocers for storing and displaying cereal, cookies, fruits and candies, etc., after the individual tea bags have been sold.

XUM

The Product

ZEUS PIPES: Manufactured by L. & H. Stern, Inc., Brooklyn, New York, designers and makers of fine pipes for over 40 years.

The Market

National. Zeus Pipes are sold by tobacconists, department stores, chain stores, etc.

Reasons for Display

To assure the product a place on the counter. The display had to be appealing, and provide adequate protection from dust, dirt and handling.

The VUEPAK Display

The Zeus VUEPAK display has a natural grain wood base and is held in a semi-upright position by an easel. The front is of heavy gauge VUEPAK with curved ends and squared sides, supported and trimmed with silver-colored rods. The product is mounted on a felt-like panel.

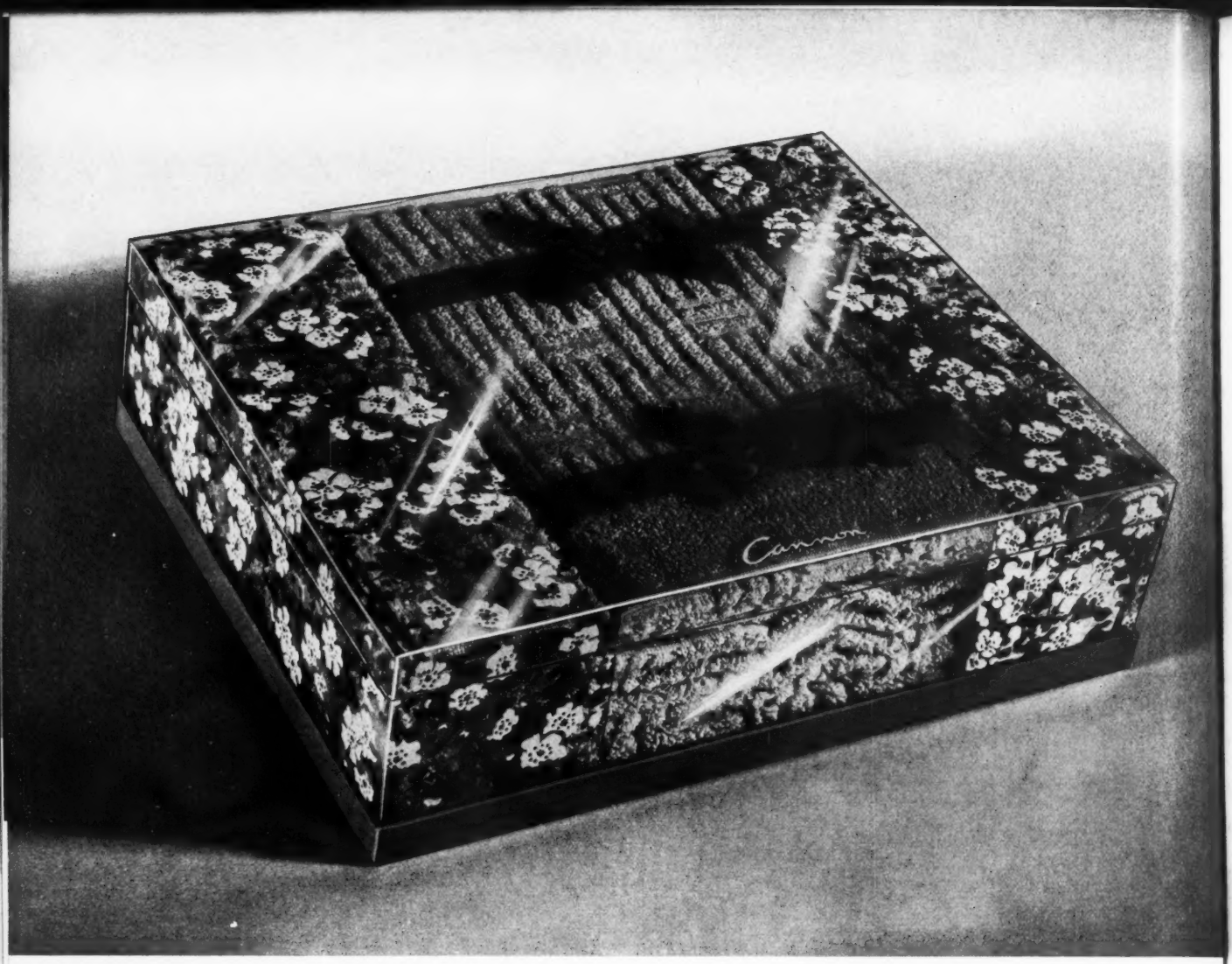
Advantages

The glistening transparency of the plastic shows the pipe to full advantage and at the same time protects against unauthorized handling. Since VUEPAK is both light and unbreakable, the display can be shipped for less money without fear of breakage. The cost of the curved surface in glass would be prohibitive.

Credits

For design and fabricating
Jos. H. Meyer Bros.
220—25th Ave.
Brooklyn, N. Y.

XUM



The Product

TOWELS: Manufactured by Cannon Mills, Incorporated.
Package contains a gift assortment retailing at $3.95.

The Market

National. Cannon Towels are sold by leading department stores, curtain shops and gift shops.

Reasons for Package

The company offers a new gift package each year.

The VUEPAK Package

The gift box is a combination of .0075″ gauge transparent VUEPAK and box board imprinted with a colorful floral design. The VUEPAK cover fits into a shallow pasteboard tray and the manufacturer's name is printed on the top. The merchandise is tied with red silk ribbons. Weight, complete with contents, 2 pounds.

Advantages

The attractive floral design and the smooth transparency of the VUEPAK lend a real quality tone to the merchandise and attract the instant attention of customers. Sanitary and compact, the package displays without risk of soiling. Stores have given the gift package prominent display positions which have resulted in satisfactory sales.

Credits

For design	*For fabricating*
Cannon Mills, Inc. 70 Worth St. New York, N. Y.	Old Dominion Box Co. Charlotte North Carolina

★

Every major trading area is conveniently served by nearby

VUEPAK FABRICATING PLANTS

Packages, Containers and Displays Are Produced in these Cities:

Atlanta, Ga.
Attleboro Falls, Mass.
Bridgeport, Conn.
Brooklyn, N. Y.
Buffalo, N. Y.
Cambridge, Mass.
Charlotte, N. C.
Cleveland, Ohio
Danvers, Mass.
Earlville, N. Y.
Hartford, Conn.
High Point, N. C.
Hoboken, N. J.
Lebanon, Pa.
Leominster, Mass.
Long Island City, N. Y.
Los Angeles, Calif.
New Haven, Conn.
New York, N. Y.
Pawtucket, R. I.
Philadelphia, Pa.
Plainfield, N. J.
Rochester, N. Y.
St. Joseph, Mich.
St. Louis, Mo.
San Francisco, Calif.
Springfield, Mass.
Toledo, Ohio
Waterbury, Conn.
Watertown, Wis.
Whitesboro, N. Y.

In Canada:

Granby, Quebec
London, Ontario
Montreal, Quebec
Toronto, Ontario

For Information, Send Details of your Packaging Problem to

MONSANTO CHEMICAL COMPANY
PLASTICS DIVISION · SPRINGFIELD, MASSACHUSETTS

★

MONSANTO CHEMICAL COMPANY

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DISTRICT OFFICES

NEW YORK	30 ROCKEFELLER PLAZA
CHICAGO	TRIBUNE TOWER
DETROIT	2312 UNION GUARDIAN BUILDING
ST. LOUIS	MONSANTO BUILDING, 1700 SOUTH SECOND STREET
LOS ANGELES	605 WEST OLYMPIC BOULEVARD
MONTREAL	378 ST. PAUL STREET, WEST

VUE-PAK
TRANSPARENT PACKAGING MATERIAL
TRADE MARK

MONSANTO PLASTICS

SERVING INDUSTRY...WHICH SERVES MANKIND

PRINTED IN U. S. A

XUM

we sell INCREASED SALES and here's PROOF!

WHETHER IT'S ORCHIDS OR SWEET PEAS...
there's a SHOWBOX for them all...and florists all over the country find transparent containers make sales faster, and the package has a re-use value for the consumer.

FINE GLOVES, SEEN AT A GLANCE...
a SHOWBOX actually enhances the quality of fine gloves, hosiery, and the like, increasing sales...it eliminates handling and the customer has an attractive transparent glove box for her very own.

LICORICE STICKS OR $3 CHOCOLATES...
candy and other edibles sell on sight when they're packaged in transparent acetate SHOWBOXES. The empty SHOWBOX can be used by the purchaser, a hundred ways, later.

- "Impulse Buying" accounts for 57% of America's total sales volume. Keen merchandisers recognize the value of transparent packages for influencing on-the-spot decisions. Shoppers can inspect without soiling... eliminating mark-downs. They know SHOWBOX packaged items are spic and span and afford consumers opportunity for re-use.

- Tests prove increases of 85% to 300% on sales of candy, hosiery, apparel, linens, and countless items when taken out of unimaginative, old-fashioned packages and presented in rigid, transparent, acetate SHOWBOXES. This sparkling form of packaging is the *only* one that increases instead of decreases mark-up.

- Department stores have found that SHOWBOXES have accomplished merchandising miracles in every department where they have been used. "Impulse Buying" skyrocketed. Now, SHOWBOX brings you luxury packages at low, volume prices. Modern production-line methods mean that you can have a special SHOWBOX for every item... *at a price!*

- Check with us on transparent packaging. One of our wide range of stock dies may enable us to produce a package for you in small quantities, at prices surprisingly low. You will be gratified with the direct and immediate reaction to your product in its clear, sparkling SHOWBOX. Write us today for all the details.

Send us a sample of your product and let America's foremost designers of transparent containers create a SHOWBOX especially for you.

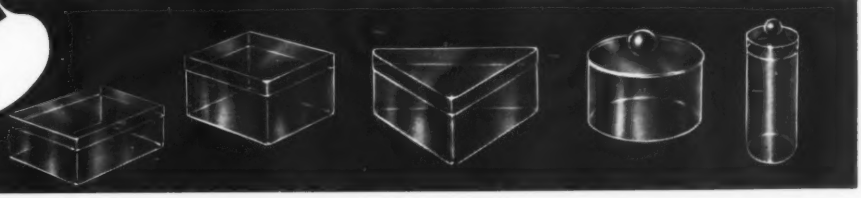
SHOWBOX

DIVISION OF:
CENTRAL STATES PAPER AND BAG CO.
2600 NORTH BROADWAY, ST. LOUIS, MO.

Our leadership in the manufacture of transparent boxes and display containers is the result of 25 years experience in the packaging industry.

Containers of transparent acetate entirely, or in combination with cardboard, tin or other material.

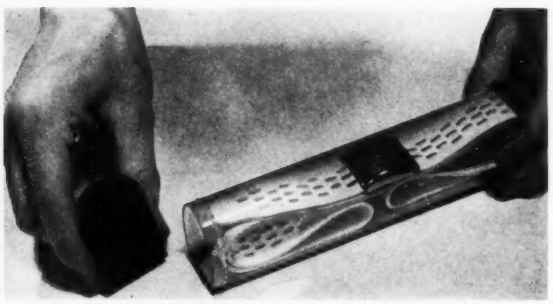
SHOWBOX
studio of Package Design



XUM

4

4. Typical pretzel, nut and candy packages which make use of the moisture resistance and strength of vinyl plastic sheets. **5.** A belt of highly plasticized vinyl material is merchandised in a box of transparent and blue unplasticized vinyl resin sheeting. Courtesy Carbide and Carbon Chemicals Corp. **6.** Drawn type cylindrical transparent acetate containers. Fabricated by W. C. Ritchie and Co. of acetate sheeting supplied by Plastics Division, Monsanto Chemical Co.



5

6

tainers. The materials are supplied to manufacturers either in sheets or in continuous-length rolls. The sheet material may be had in varied thicknesses, in gauges ranging from .003 in. upward. Continuous-length materials are available in a number of standard gauges including .003 in., .005 in., .0075 in., .010 in., .0125 in., .015 in. and .020 in. Heavier sheets are available on order. Whenever possible, manufacturers prefer to use continuous-length material as there is less waste in cutting and trimming.

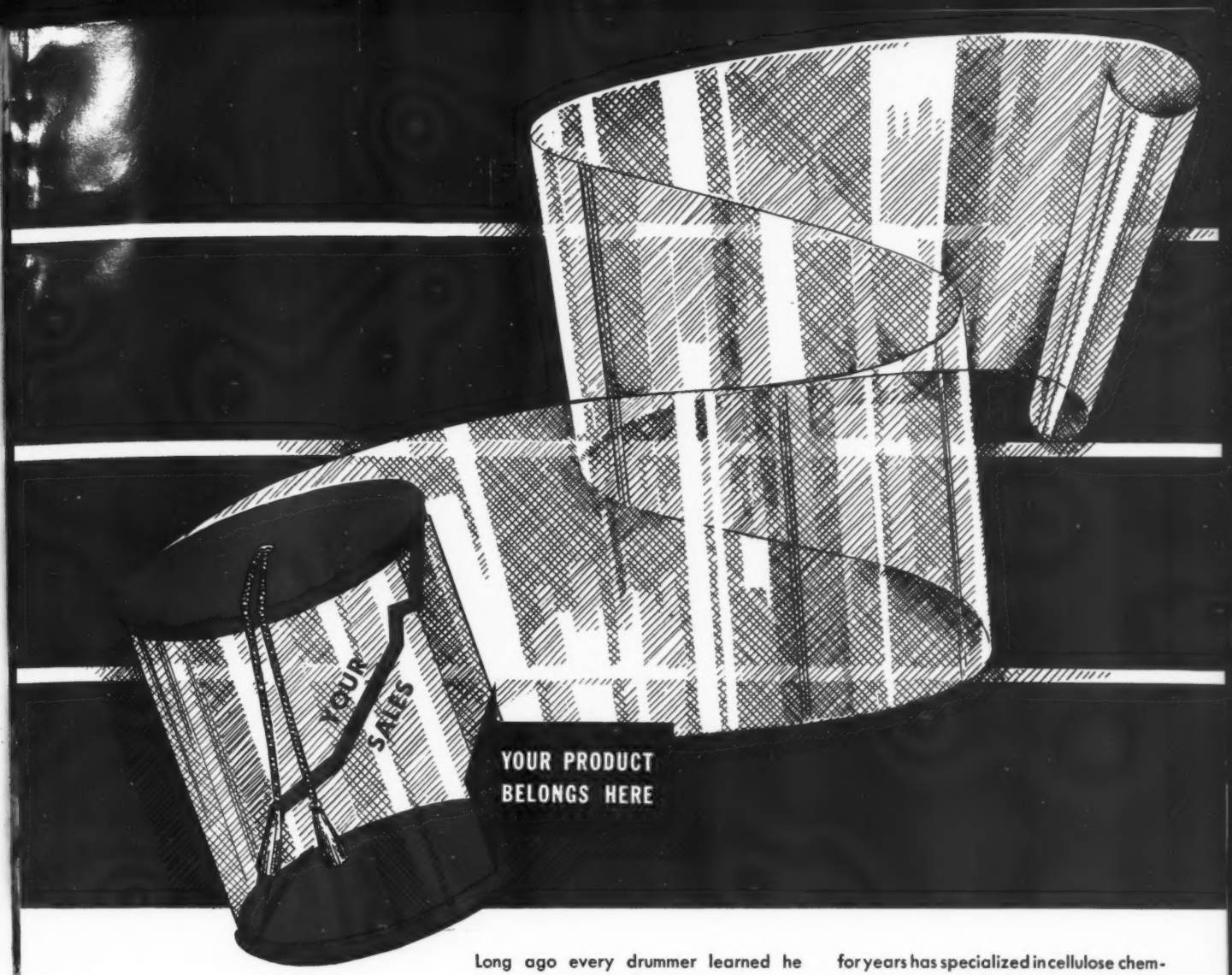
The materials are made in clear transparent form and also may be had in tinted and colored transparencies and in translucent form. Since cellulose acetate is not affected by extreme changes of temperature or humidity, and since the effect of light can be allowed for in advance, packages made of this material do not tend to deteriorate in transportation, storage or display.

Press Polishing

When fabricators wish to print surfaces of vinyl resin, it is necessary for them to obtain sheets in matte finish on at least one side. After printing on the matte surface, it is often necessary to re-press the sheet in order to bring out the glossy surface usually desired. Such pressing is carried on between chromium plated planishing plates in a multiple platen steam heated press.

Fabrication Processes

Described below are the general fabrication processes as used for cellulose acetate film as well as for vinyl resin and ethyl cellulose sheetings.



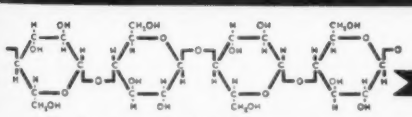
VISIBILITY
SKYROCKETS
SALES

Long ago every drummer learned he could sell more by displaying his line; yet manufacturers are amazed at the sensational increases in sales that follow when merchandise comes out of hiding . . . tempting shoppers' eyes in clear, transparent containers. Products as various as shoes and perfumes, shirts and oranges, stage run-away markets when they stand forth for all to see in sturdy, individual showcases.

The new packaging material that shows goods so alluringly on shelves and counters, and sets cash registers chattering, is cellulose acetate sheeting. Hercules is one of the world's largest manufacturers of all types of cellulose derivatives, and for years has specialized in cellulose chemistry. As a result, Hercules cellulose acetate has won world-wide recognition for unusual stability, uniformity, color, and clarity.

Manufacturing skill, gained by long experience and extensive research, produces a Hercules cellulose acetate base with exactly the right characteristics to make sheeting that is clear as glass, rigid yet pliable, sinewy and tough; perfectly suited for transparent containers that will give the utmost in service and sales-appeal.

When a product is to be packaged in this modern dress, self-interest dictates that the rigid, transparent sheeting should be made with a Hercules cellulose acetate base—for greatest effectiveness.



The long complex chain structure of cellulose molecules makes cellulose a good material from which to make tough plastics.

HERCULES POWDER COMPANY

HERCULES CELLULOSE ACETATE

CELLULOSE ACETATE . . . NITROCELLULOSE . . . ETHYL CELLULOSE . . . PARLON (Chlorinated Rubber)

XUM

Transparent PACKAGES BY RITCHIE *that Sell- and Sell- and Sell!*

THEY SELL the dealer the idea of displaying them. They sell the consumer the idea of stopping, looking and handling (it's all right — no danger of soilage). After that, the *actual* sale is easy and *everybody's* happy! Particularly Mme. Huntingford whose packages here typify the design ingenuity and manufacturing advantages Ritchie brings to Transparent Packaging. In this comparatively new field, Ritchie's complete and established facilities, Ritchie's 74 years of packaging experience, really count!

PUT YOUR PRODUCT OUT IN FRONT

Would you like to have a package that dealers will display without even being asked? Would you like to have a package that shows your product to such advantage that sales resistance melts like ice cream in July? Then investigate Transparent Packaging by Ritchie — learn what it costs, what it can do for you from a design and protective standpoint. There's no cost or obligation — so why not write now? Outstanding free design service for established manufacturers.

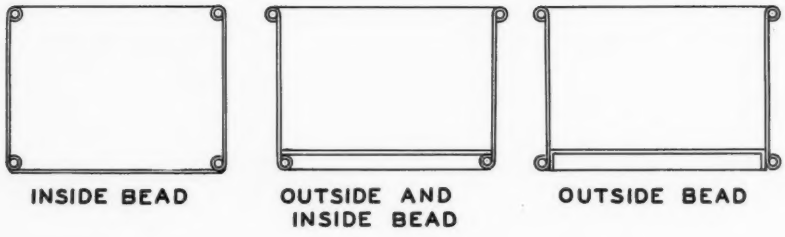
W. C. Ritchie AND COMPANY

SET-UP PAPER BOXES
FIBRE CANS
TRANSPARENT PACKAGES

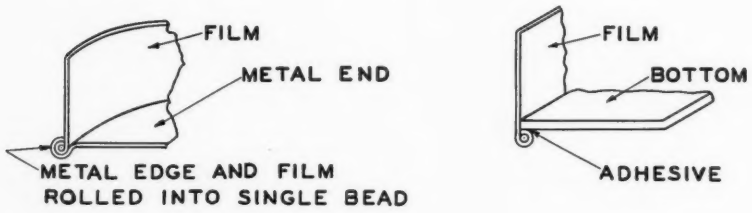
8861 BALTIMORE AVENUE • CHICAGO

NEW YORK DETROIT LOS ANGELES ST. LOUIS ST. PAUL DENVER MIAMI

XUM



7. Types of double beaded transparent plastic side walls and methods of attaching bottoms.



8. Left. Crimping transparent side wall to a metal bottom to form a cylindrical container. Right. Sealing bottoms to an inside bead.

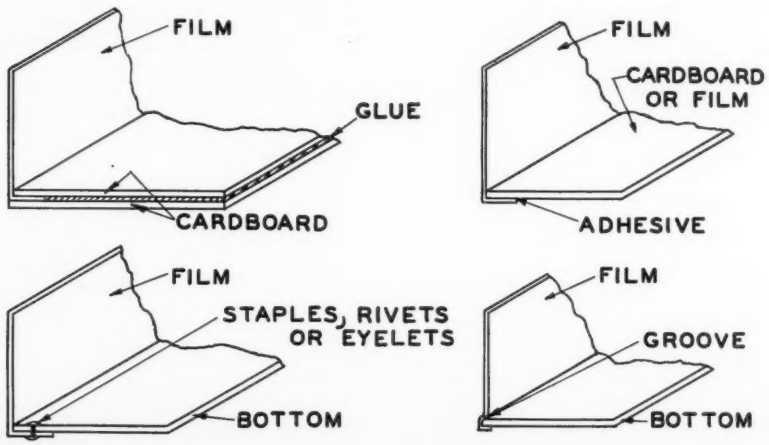
Cylindrical containers: For the bodies of cylindrical containers, the transparent sheet is cut into rectangular pieces, one dimension being equal to the intended circumference plus $^1/_8$ in. for seam overlap. The dimension representing the height of the container is cut $^3/_{16}$ in. to $^3/_8$ in. longer than the finished height to allow for the material taken up in the formation of the edge finishes or beads. The amount of the allowance is dependent upon the thickness of the stock used and the size of the bead to be formed.

The bottom of the container, as well as the top and the cover, is formed of a disc of transparent material cut with a "chop out" die in a power press. The body of the telescoping cover is cut similarly to the body of the container, allowing about $^1/_{32}$ in. greater in diameter.

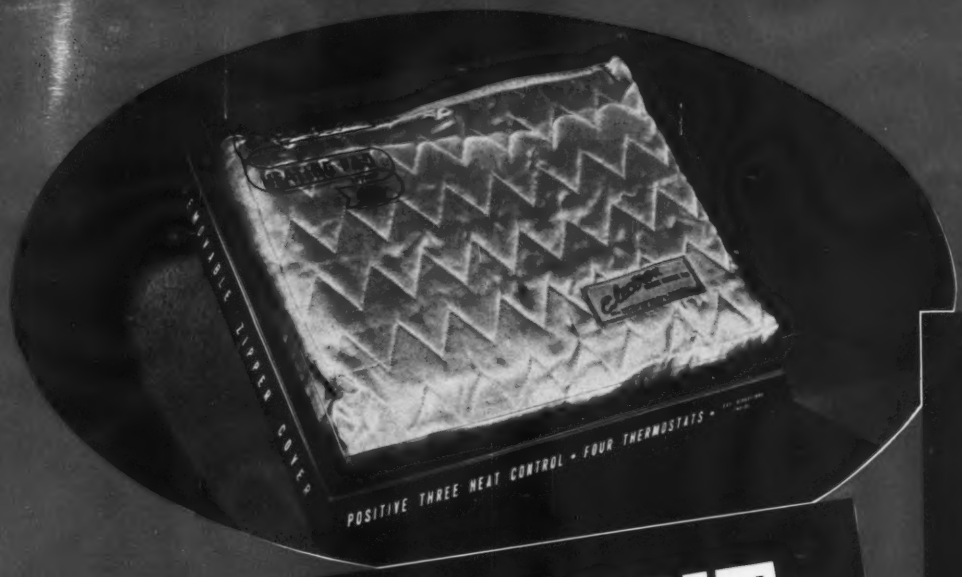
The rectangular blank is mounted around a cementing mandrel of required diameter and overlapped for the seam. The mandrel is a highly polished chromium or nickel plated tube held in a horizontal position. Along the top is a brass bar which, under spring tension, firmly holds the blank along the overlapped seam. A small camel's hair brush, dipped in solvent cement, is drawn along the seam opening. The cement flows between the layers by capillary attraction. Drying time varies from approximately $^1/_4$ to 3 min., depending upon the thickness of the material.

Beading: Beading is a form of edge finishing in which pressure or heat and pressure are used to turn and form the edge of the transparent sheet material into a firm round curve. Machines are available for beading continuous lengths of material before they are cut into container blanks. Simpler machines are used to bead the cut blank before forming into tubes. Beading dies and wooden mandrels may be used to apply a bead after the tube has been cemented. The choice of method depends, in large measure, on the quantity of containers being produced and the particular style and structure of the container.

Bottom and top discs of transparent sheeting or cardboard may be attached to the cylinder by various means. One of the most common methods is to place the disc on the top surface of a cementing form over which the beaded cylinder is slipped until the bead comes into contact with the disc. A brush is used to apply solvent cement to transparent sheet bottoms or adhesive for



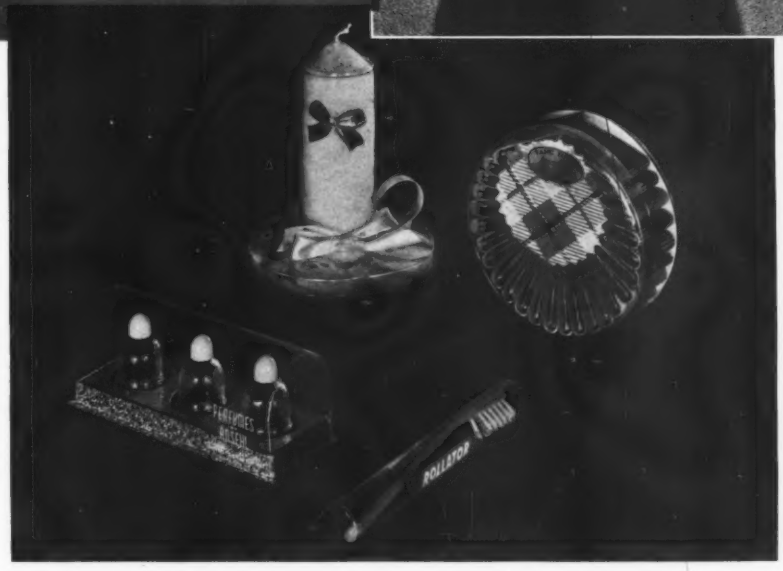
9. Methods of fastening side walls of transparent plastic sheeting to bottom of cardboard or heavy gauge transparent sheeting.



COVER of transparent Eastman Acetate Sheet makes this package a miniature showcase . . . gives protection against dust and handling. Label in upper left corner is printed on the cover.

TRANSPARENT Eastman Acetate Sheet, decorated with a printed design, forms the body of this "pail"; top and bottom are of lacquered tin, handle is of plastic. This sturdy construction makes the container ideal for re-use by the customer.

OUT IN FRONT
where sales are made



EVERY ITEM in every store has plenty of stiff competition. And the merchandise that is attractively packaged—well displayed—has the first and best chance at the customer's dollar.

You can give almost any product this advantage by packaging it in *Eastman Acetate Sheet.* This versatile material makes an attractive, durable container that provides complete protection against dirt and dust as well as soil resulting from handling. Merchandise stays in such perfect condition when packed in *Eastman Acetate Sheet* that the problem of shopwear is virtually eliminated.

Eastman Acetate Sheet fits easily into almost any package design. Use the transparent type as a window in the carton or, for even better display, as a rigid cover . . . or make the entire container out of the type that best fits the need. No matter how you employ *Eastman Acetate Sheet* you are sure to have an attractive package . . . one that will boost sales.

For more information about the many uses of *Eastman Acetate Sheet,* or for working samples of any of the three types, write to Eastman Kodak Company, *Chemical Sales Division,* Rochester, N.Y.

A TYPE FOR EVERY NEED

EASTMAN ACETATE SHEET is available in rolls up to 40″ in width and any convenient length, and in standard- and cut-to-size sheets. Transparent type is furnished in 7 thicknesses, from .003″ to .020″; matte-surface (translucent) type in .003″, .005″, .0075″, and .010″; colored (translucent) type in a wide range of light-fast pastel shades. All three types of *Eastman Acetate Sheet* can be scored, folded, pleated, fluted . . . take printing inks without wrinkling . . . cement with an unyielding bond . . . do not crack or shatter. The transparent type can also be molded and drawn.

THESE PACKAGES demonstrate the versatility of Eastman Acetate Sheet—how it takes printing ink perfectly . . . how it can be combined with other materials . . . how it makes novel designs entirely practical.

• • •

Packages illustrated were fabricated by the Parfait Powder Puff Co., Inc., Chicago, Ill.

The insert is a sample of Eastman Acetate Sheet—.010″ thickness

Eastman Acetate Sheet ATTRACTS PROTECTS SELLS

XUM

cardboard bottoms. Bar weights are used to hold the bead firmly on the bottom until the adhesive sets.

Bottoms are sometimes formed of rabbeted discs made of plastics, boxboard or wood. In such cases, the cylinder is given an outside bead, rests on the rabbet and is cemented thereto. Another form involves a shallow plastic, cardboard or wooden cup formation. The cylinder has an inside bead and is cemented into place. A fourth form utilizes a metal base seamed into place in a manner similar to that used in metal can formation. Exterior beading is formed as a part of the seaming process.

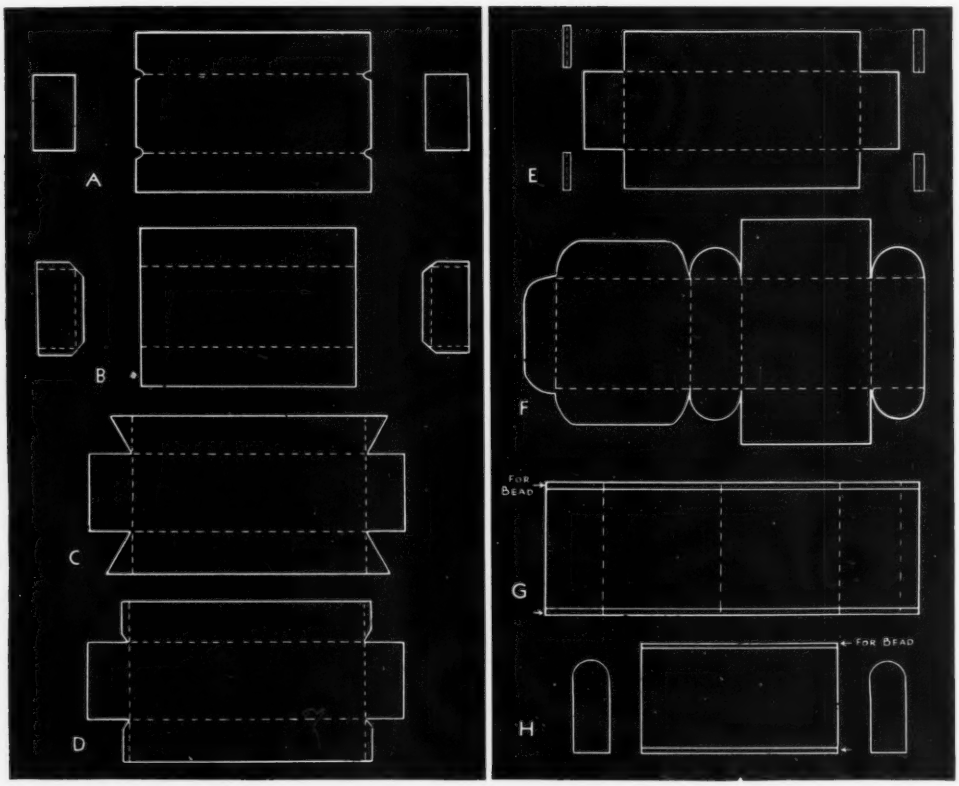
Rectangular containers: Rectangular containers are made up of one or more blanks cut from sheets which are folded, assembled and cemented in the required shapes. A number of types or shapes are shown in illustration. The blanks are cut down on regular cutting presses similar to those used in paper cutting. Corners are cut with "chop out" dies in a power press. These dies are made of rigid strips of tool steel with a sharp cutting edge set in a block of wood or metal. Creasing, scoring and folding is done on standard creasing machines usually consisting of electrically heated creasing bars operated by foot pedal against sponge rubber pads. Adjustable stops behind the creasing bar quickly locate the sheet to be creased. Where volume production is involved, adjustable creasing dies which crease and score four sides at once are used on power presses. In cementing the seams of rectangular containers, the method used is similar in principle to that used on cylindrical tubes except that rectangular blanks are used in place of round mandrels. Adjustable cementing forms—sometimes heated—have been developed by several manufacturers.

Drawn types: Drawn containers may be formed by pressing the sheet, under controlled heat, between male and female metal dies. Depth is governed by the gauge or the sheet and the type and construction of the die as well as by speed of processing. Undercuts are difficult—though not always impossible—to achieve. Embossing simultaneous with drawing, is frequently performed. Rounded edges and corners are desirable to facilitate drawing. The drawing process is particularly advantageous because of its speed and simplicity and because of the possibilities it offers for the achievement of unusual shapes.

Other fabrication methods: Seams on transparent containers are sometimes secured by sewing, stitching and eyeletting. These methods, however, do not provide a sift-proof seam, although they may provide ample sturdiness where the product requires neither airtightness nor freedom from sifting.

Metal edging, similar to that used on paper carton blanks, is sometimes used as a stay material in erecting rectangular containers. For decorative purposes and to secure additional strength and rigidity, metal wire or decorative cord is sometimes rolled into a bead during the bead-forming operation.

Transparent sheet materials are increasingly being decorated by printing and by roll leaf stamping with metallic foils.



10. Rectangular containers are made up of one or more blanks cut from sheets of rigid transparent acetate material which are folded, assembled and cemented in the required shapes. Eight types or shapes of cut blanks are illustrated.

LUSTEROID

VIALS – TUBES – PUFFER TUBES APPLICATORS – PACKAGING AND SAMPLING

LUSTEROID packages have the three features that you must demand of your package: they are beautiful, economical and strong.

Their beauty of color and luster gives them sales and sampling appeal. They come in every color, shade and tint you wish. Multicolor labels are processed *integrally* to LUSTEROID containers. They are available either transparent or opaque. They are smooth and pleasant to touch.

The economy of LUSTEROID containers lies in their integral color and their strength. The processing of labels directly to the containers eliminates the bugaboos of high label costs and the possibility of losing the label from the package.

LUSTEROID'S strength means the elimination of breakage. And because LUSTEROID is extremely light in weight, as well as strong, shipping costs are reduced to a minimum. No wadding or packing is necessary—eliminating this cost and further reducing shipping weight.

LUSTEROID containers are custom-made to individual needs. They are ideal for both sale and sample packaging.

A note or 'phone call will bring an answer to your packaging problem.

LUSTEROID CONTAINER CO., INC.

Formerly Lusteroid Division of The Sillcocks-Miller Company

10 Parker Avenue, West

SOUTH ORANGE . . . . . NEW JERSEY

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1. Cellulose derivative containers are capable of a wide variation not merely in size, but in shape and function. Note use as a hood for the emergency hypodermic needle on the morphine tube in the lower left hand corner. Large vial in center of picture is formed of two cellulose derivative cylinders fitting over each other. Cylinder in lower right corner is equipped with metal dispensing head. Upper three containers have threaded slip-on metal closures. Courtesy Celluplastic Corp.

Cellulose Derivative Containers

Cellulose derivative containers, like the closely related rigid transparent box, are made from cellulose nitrate and acetate materials. They are made in a practically limitless range of colors and shades; clear, tinted or opaque. Containers are formed or drawn in special processes which produce a seamless shell in an almost limitless number of variations of the basic cylindrical shape. Thus, short, stubby jars, tall thin vials, tubes similar in shape to the metal collapsible tube, shapes similar to glass ampoules and shapes similar to the familiar gelatine capsule are thoroughly practical.

Containers of this sort are usually "labeled" when made, the lettering and design being processed directly upon the container material and becoming an integral, permanent, fixed part of the package. Since threads can be molded-in in the forming process, screw type closures are frequently used in conjunction with these containers, the most common being single shell metal closures and molded caps. Cap-like closures, made in a manner identical to that of the container itself, are likewise frequently used.

Because of their resiliency, these containers resist damage and breakage. This quality, and the light weight and lack of bulk of cellulose derivative containers, have combined to make them extremely desirable in sampling, in the packaging of medicinal and related products and in the packaging of mail-order items. In the pharmaceutical field, the inertness and sanitary qualities of the cellulose material, of which these containers are made, serve as an inducement to their adaptation.

Cellulose derivative containers are produced on specification and thus can be made to embody the constructions meeting the special requirements of each manufacturer without entailing additional expense.

Certain types of cellulose derivative containers offer mechanical advantages unobtainable at present through the use of any other material. Among these is the puffer type, in appearance similar to the standard collapsible tube. These are ideal for the packaging of powders which must be sprayed in use, since the resilient tube acts as a bellows when pressed and after ejecting, the spray of powder returns to its original shape.

Collapsible tubes, made by the seamless cellulose process, are widely used for the packing of certain ointments which are not compatible with tin or aluminum. The tubes are also excellent for the packaging of oil or grease base creams and lotions.

2. Metal snap-on closures are frequently used. Cellulose derivative containers are also, on occasion, used as package accessories such as the tobacco measuring jug. Photo courtesy Lusteroid Container Co., Inc.

Cross References: Aluminum Containers and Vials, page 244; Collapsible Metal Tubes, page 250; Glass Vials, Tubes and Ampoules, page 297.

XUM

A NEAT LITTLE PACKAGE—

IS THIS TRANSPARENT ENVELOPE OF *Ethofoil*

THE ETHYLCELLULOSE PACKAGING MATERIAL

PRODUCED BY DOW

FOR OTHER EXAMPLES OF THE UTILITY OF ETHOFOIL TRANSPARENT PACKAGING, SEE REVERSE SIDE.
ENVELOPE MADE BY MARKILO, 3633-D SOUTH RACINE AVE., CHICAGO, ILLINOIS

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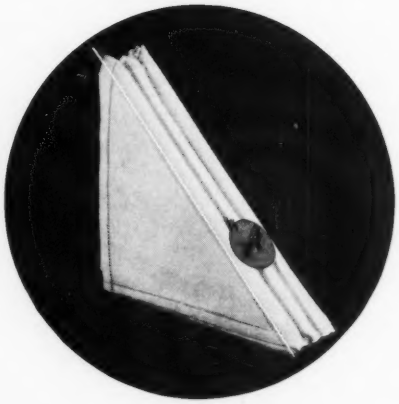
Ethofoil PROPERTIES

MEET RIGID PACKAGING DEMANDS . . .

TOUGHNESS

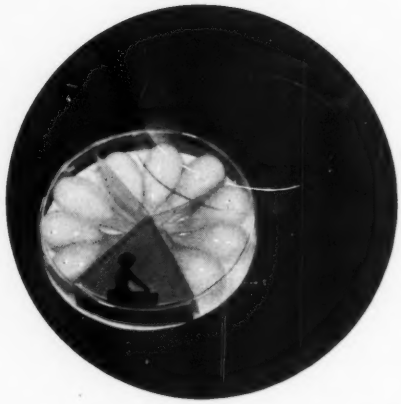
ETHOFOIL was used because it permits scoring through the bead without breaking and stands the hard usage required of this sales display container.

FLEXIBILITY



ETHOFOIL was used for this *one-piece* package because it stands scoring and folding without loss of flexibility.

DUCTILITY



ETHOFOIL was used for this *two-piece* package because it can be drawn and beaded without embrittlement.

ETHOFOIL* is easy to fabricate and economical to use. Its toughness, flexibility and ductility help to eliminate rejects in production. ETHOFOIL packages retain their shape without warping or cracking during storage.

ETHOFOIL remains brilliantly clear and can be effectively printed. It does not become brittle with age or discolored by light. ETHOFOIL is outstanding in its flexibility, particularly at low temperatures and low humidities.

ETHOFOIL is available in thicknesses up to .020" and it can be supplied in sheets or rolls either transparent or colored. For more complete information write the Cellulose Products Division of THE DOW CHEMICAL COMPANY, Midland, Michigan.

*Trade Mark Reg. U. S. Pat. Off.

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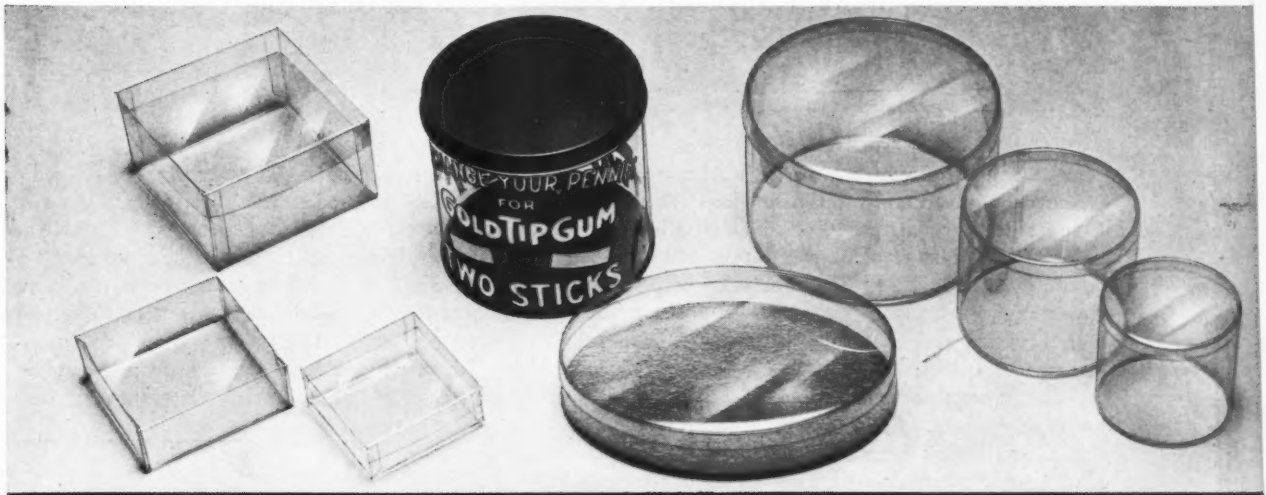
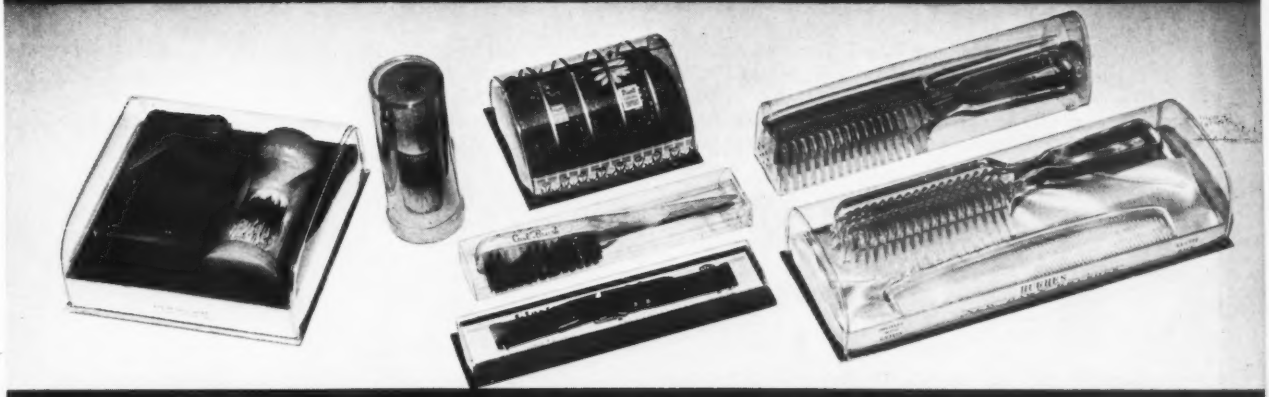
TRANSPARENT PACKAGING For Every Need



Complete range of round stock dies from 1⅜" to 8"—square shapes in all dimensions—other shapes economically produced to meet specifications.



Some transparent packages, produced by our versatile service, which are helping to build sales for leading trade-marked items.

A few transparent displays, created by our design department, which are solving merchandising problems.

Bring your transparent packaging and display problems to an organization which specializes in the application of transparency to modern merchandising. Large and small orders—every type and size of transparent acetate container and display—available with equal facility, economy. Special automatic equipment for low cost, volume production.

ALLVUE CONTAINER, INC.

169 FRANKLIN AVENUE • • • BROOKLYN, NEW YORK

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Rigid Transparent Displays

The same qualities which have led to the use of transparent cellulose acetate sheeting in the packaging field have made these materials desirable as displays. In point of fact, a large number of the packages made of cellulose acetate verge very closely on display form. However, an increasing number of manufacturers have been adopting specially made displays, utilizing cellulose acetate to achieve increased visibility for their products in conjunction with protection against breakage, handling, spilling, soilage, etc.

In their simplest forms, these displays take the shape of troughs or pails into which a quantity of the product may be either neatly arranged or thrown in jumbled fashion for mass display. Stitched and stapled boxes of this sort, usually with a back panel of printed or lithographed board, have been widely used by the makers of chewing gum, roll-packed candies and small medicinal items such as aspirin. Others have utilized cylindrical or conical pails with cellulose acetate walls and metal bottoms as so-called "catch pennies" to be placed near cash registers on drug, cigar and variety store counters.

Manufacturers of more expensive merchandise such as perfumes, watches, electric shavers, etc., have found

Cross References: Transparent Combination Boxes, page 86; Rigid Transparent Containers, page 104; Displays: Design, Distribution and Installation, page 346; Transparent Boxmaking Machinery, page 472.

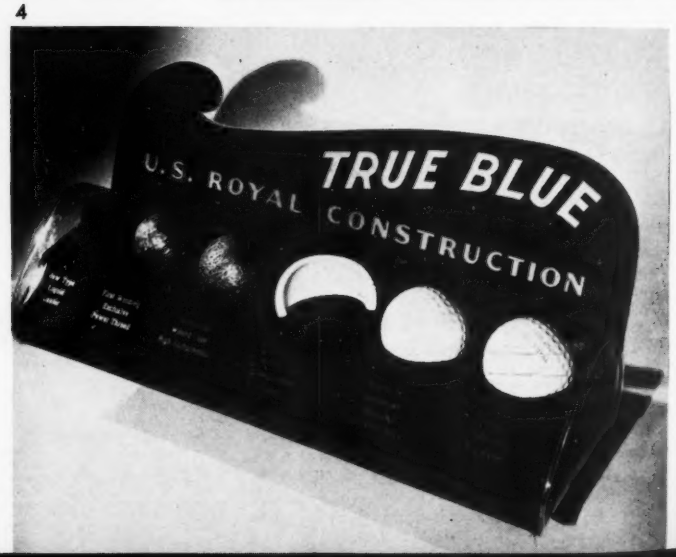
1. Simple tray display formed of beaded acetate sheet with paperboard bottom, back and folding display panel. Photo courtesy Plastics Division, Monsanto Chemical Co. **2.** Transparent side walls of this display are edged with metal for rigidity and added strength. Photo courtesy Eastman Kodak Co. **3.** A cylindrical display with seamed-on metal bottom. Note vent holes near bottom. Photo courtesy Celluloid Corp. **4.** A curved acetate shield forms the transparent portion of this demonstrator display. Photo courtesy Celluloid Corp.

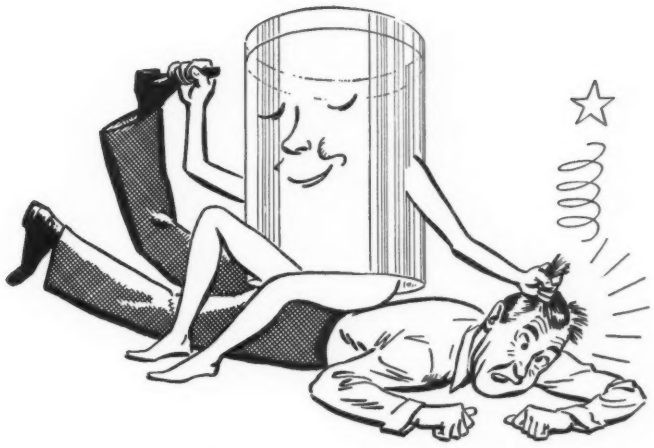
1

2

3

4





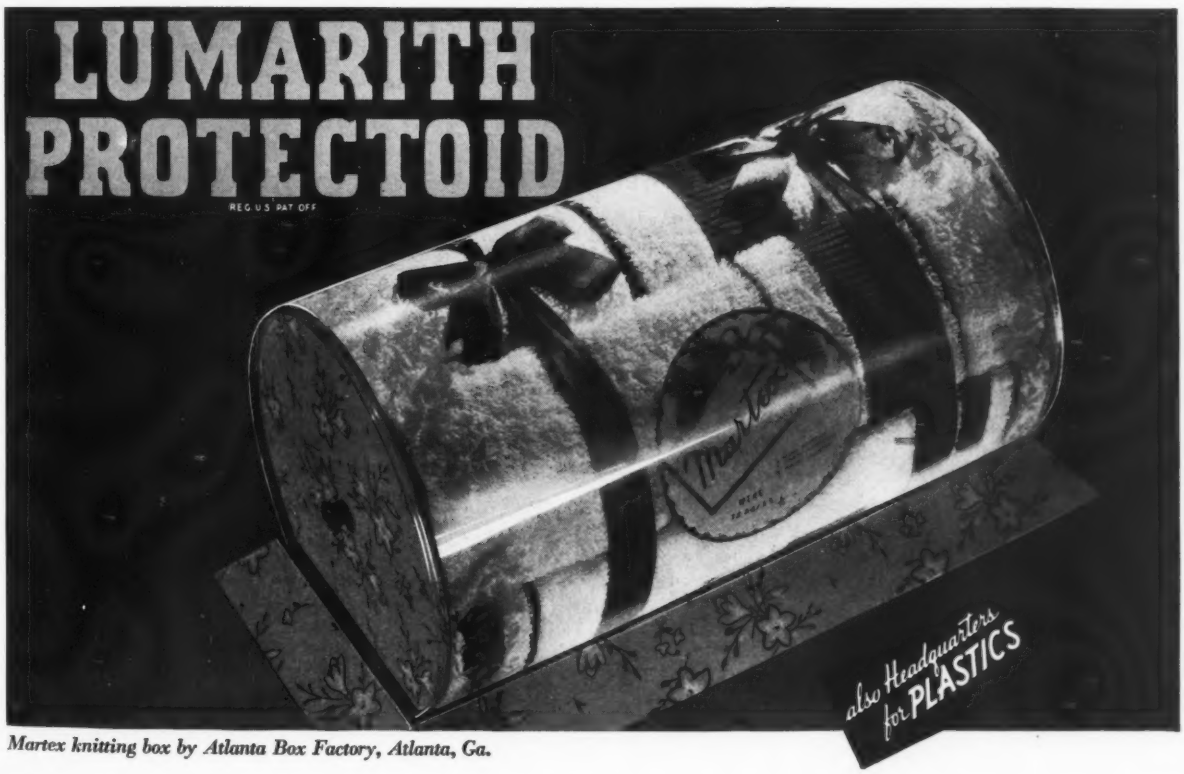
When a rigid container problem gets you down . . .

WHY struggle with design and production problems in rigid transparent containers — when the solution is probably waiting in Celluloid's broad experience, ready for your call?

Get in touch with CELLULOID

You'll get the advantage of Lumarith Protectoid—the crystal-clear transparent so consistently successful in deep draws and forming. Never cracks when formed —hence cuts down rejects, and reduces transit losses. You'll get the advantage of Celluloid's technical advisory service on all phases of construction and fabrication, including adhesives that work perfectly with all formulas of Lumarith Protectoid. You'll get *everything* you need for best results!

Get in touch with Celluloid today. Packaging Division, CELLULOID CORPORATION, 180 Madison Avenue, New York City. Established 1872. Sole Producer of Celluloid and Lumarith. (Trademarks Reg. U. S. Pat. Off.)



Martex knitting box by Atlanta Box Factory, Atlanta, Ga.

5. Dispenser displays with detachable cone compartments formed of acetate sheeting. Photo courtesy Eastman Kodak Co. **6.** An acetate sheet drawn to a curve forms the protective hood for this pipe merchandiser. Photo courtesy Plastics Division, Monsanto Chemical Co. **7.** A transparent cylinder with metal lid is so formed as to fit into the rectangular base of this cone dispenser. Courtesy Celluloid Corp. **8.** A drawn circular transparent sheet provides a protective housing for the valuable products here displayed and insures visibility from a wide angle. Courtesy Plastics Division, Monsanto Chemical Co. **9.** Acetate sheeting replaces the traditional glass in this wooden counter merchandiser. The sheet is carried in a curve over the lower front frame, increasing the openness of the design. Courtesy Eastman Kodak Co.

that a display which encloses their product in a transparent hood serves to enhance its appearance while reducing or eliminating the hazards of open display. Such displays are usually constructed with a board, metal, molded or cast plastic base, and a hood of transparent material which may be opened or lifted to provide access to the product within.

Recent design trends have been following two divergent courses. In combination with lithographed or printed board, simple units have been created for the merchandising of such "penny catchers" as chewing gum, candies, razor blades, etc. These usually take the form of stapled or cemented square or round baskets, with front and side walls formed of transparent sheeting and bottom and back (including back panel sign) formed of paperboard, suitably printed.

On the other hand, manufacturers of more expensive products have utilized combinations of acetate sheeting and wood, metal or plastics to form what are virtually permanent display cabinets for store counter use in preferred locations. These are miniature equivalents of the old-fashioned glass store counter cabinet, dressed up in streamlined fashion to harmonize with modern store equipment.

XUM

WRAPPINGS AND TIES

Section Five

Pages 153 to 202

DECORATIVE MATERIALS—GENERAL CONSIDERATIONS
FANCY BOXMAKING PAPERS
DECORATIVE FOILS
DECORATIVE GLASSINE PAPERS
DISPLAY AND BACKGROUND PAPERS
PRINTED TRANSPARENT SHEETING
DECORATIVE TISSUES
LEATHERETTE AND FABRIC MATERIALS
DECORATIVE RIBBONS AND TIES
PROTECTIVE MATERIALS—GENERAL CONSIDERATIONS
PROTECTIVE FOILS
WAXED PAPERS: TYPES AND USES
PROTECTIVE GLASSINE PAPERS
VEGETABLE PARCHMENTS: TYPES AND USES
TRANSPARENT WRAPPING SHEETING
LAMINATING AND COMBINING
TARNISH RESISTANT PAPERS
PACKAGE SEALING TAPES
SHREDDED PAPER AND CELLULOSE
RESIN TREATED PAPERS

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Judge its Merits
ROTTED FLAVOR
RIVAL BLUE
BRAND
COFFEE
5¢ BLIND ROBIN $ 5¢
SMOKED
BONELESS HERRING
ALL AMERICA PACKAGE COMPETITION
SPONSORED BY MODERN PACKAGING
Four Top Awards
Transparent and Opaque wraps
All-America Package Competition
STARTS WONDER-DRI
TOWEL
YOUR NAME
MEAT LOAF
YOUR NAME
MEAT LOAF
YOUR NAME
YOUR NAME

by its Successes

in moisture-proof packaging

THE roster of products now packed in *Pliofilm* — only a few of which you see here — is ample proof of its superior protective values. No other transparent wrap *combines* its water-moisture-vapor-proofness—its airtight heat-seal—its high tensile strength and durability. That is why *Pliofilm* has no equal in keeping moist things *moist* — in preventing moisture-absorption —plus ability to stand rough handling. For many packagers it has given an economical answer to their most difficult problem—why not see what it could do for you? Write: Pliofilm Sales Department, Goodyear, Akron, Ohio.

DO YOU KNOW THE A-B-C's OF *PLIOFILM*?

Acidproof
Airproof · Alkaliproof
Dimensional Stability
Durability · Greaseproof
Handles in High-Speed Machines
Impervious to Heat and Cold
Made in all Colors
Moisture-Vaporproof
Moldproof · Non-Explosive
No Fire Hazard
Oilproof · Pliable · Printable
Puncture-Resistant
Sealed by Adhesives, Heat, Solvents or Sewing
Tasteless · Tear-Resistant
Vacuum-Scalable
Verminproof · Waterproof

THINGS ARE BETTER SEALED IN

made only by **Pliofilm GOODYEAR**

Pliofilm—T.M. The Goodyear Tire & Rubber Company

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Decorative Materials — General Considerations

Wrapping and ties are the most flexible of the raw materials which go into the makeup of modern packages. They can be used in more varied ways to attain more varied effects than perhaps any other single group of materials. It is the purpose of this article to discuss not any single type of decorative wrapping material, but, rather, the general considerations which should govern the selection of any material and the manner in which it is to be used. In another article on pages 177 and 178, a similar discussion of protective materials appears.

While the subjects of decoration and protection may be treated as if they were separate and distinct, it should be remembered that no material fits into either of these categories alone. All protective materials are potentially decorative. All decorative materials may be utilized for protective as well as for decorative qualities. In fact, in many an instance the decorative qualities attained in the package result from what architects and artists call "pure functionalism." The material serves a decorative purpose simply because it serves its protective purpose so thoroughly and so well. Many examples of this sort may be found among everyday packages.

Foil wraps, adopted for protective reasons primarily, frequently create exceedingly attractive decorative effects. The same is true of cords and ribbons of the simpler types, of simple paper whose color rather than pattern create decorative notes and of plain unprinted transparent sheeting whose glistening surface frequently combines with the product beneath to form an exceedingly attractive package, although the attraction arises purely from the functional way in which the material of protection has been utilized.

Nonetheless, packagers have not been satisfied to package for protection alone. They have found it necessary to strive for decorative effects as a means of attracting the consumer's eye under the severest competitive conditions, as a means of pleasing dealer and consumer and as a means of inducing the continued use or re-use of the package—as a part of the product or a supplementary product—and thus increasing the sales value of the product or the volume of sales attained.

Decorative Functions are not Isolated

Frequently enough the requirement for such decoration can be combined with other requirements of the package. Every package is an advertisement—a crucial advertisement—and as such it must have illustration, copy and design. It must say things to the consumer. Whether it says such things well or badly depends upon the art of the package designer and the skill with which he has used his decorative materials as a surface upon which to apply ink, color and illustration.

It will thus be seen that the selection of decorative materials for a package is not comparable to the picking of a curtain fabric or the choosing of a dress material. In the latter case, one must merely please oneself. In selecting decorative materials for packages, one must attain a complicated and often contradictory group of objectives. Let us list them:

1. The decorative material or materials must be "universally decorative," i. e., they must appeal either to all people or that special segment of the population for which the product is designed. Frequently this means that papers, glassines, foils, printed transparent materials, tissues, leatherettes or ribbons must be utilized which are not attractive to the package producer at all, but which are believed to be attractive to the consumer group to whom his product is designed to be sold.

2. These decorative qualities must be attained without sacrifice of protective qualities required by the product of the package. If possible, they must be attained through the very materials which provide the protective qualities. It is naturally more economical to use a single wrap that affords both protection and decoration, than to utilize an underwrap of protective material and an overwrap of decorative material.

3. Decoration must be achieved within an economically practicable range of costs. Decoration must not slow up the packaging process unnecessarily. It must not involve long and tedious extra steps, high labor costs, large factory areas and to cause an addition to the product's cost.

Rules Vary with the Product

It will be seen, of course, that these rules are general in nature. They do not apply equally to all products. In the cosmetic industry or the jewelry industry where wide margins of profit are customary and competition as between products is carried on, largely through the package, substantial sums of money can be spent upon the decoration of each item. Since production in some fields is on a limited non-mechanized basis, it is possible, in those fields, to choose the more complicated decorative materials that require hand operations for

Cross References: Procedure in Design, page 6; Merchandising Considerations, page 11; Production Considerations, page 13; Color and Reproduction Methods, page 16; Trade Mark and Copyright Protection, page 30; Set-Up Paper Covered Boxes, page 74; Permanent and Re-Use Boxes, page 94; Fancy Boxmaking Papers, page 160; Decorative Foils, page 162; Decorative Glassine Papers, page 164; Display and Background Papers, page 165; Printed Transparent Sheeting, page 166; Decorative Tissues, page 172; Leatherette and Fabric Materials, page 173; Decorative Ribbons and Ties, page 174; Protective Materials—General Considerations, page 177.

DESIGNING
ENGINEERING
PRODUCTION

A COMPLETE SERVICE
for Users of
PACKAGES
Providing
PRODUCT PROTECTION • VISIBILITY
• HIGH MERCHANDISING VALUE •
EFFICIENT APPLICATION • BEAUTY

SHELLMAR

MOUNT VERNON, OHIO

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DESIGNING • ENGINEERING • PRODUCTION

PACKAGES

Meeting and answering the demand for unusual packages is the everyday job of the SHELLMAR organization. Whatever the nature of the product, SHELLMAR can supply a package providing every essential of good packing practice.

Visibility

SHELLMAR produces transparent packages in a wide variety of forms, including flat sheets; continuous rolls; flat, square or satchel-bottom bags; envelopes; window cartons; Shell-Pax and Tray-Pax.

Beauty

Expert artists and designers are able to create packages of unusual beauty, because SHELLMAR equipment permits of reproduction in from one to seven colors, in any of three processes of printing.

Protection

All SHELLMAR packages embody protective qualities. The wide range of materials and package forms employed in their production permits the incorporation of the exact kind and degree of protection required by the product.

Utility

Technical and mechanical engineers supervise all SHELLMAR package production, and are available for consultation or advice to insure efficient, economical production-line utilization of the package in the user's plant.

Selling Power

Over and over, SHELLMAR packages have proved their ability to aid in making, holding and increasing sales in the most highly competitive fields of consumer-goods merchandising.

YOUR INTEREST IN A SHELLMAR PACKAGE FOR YOUR PRODUCT, EXPRESSED IN A LETTER, WIRE OR PHONE CALL, WILL BRING DETAILED INFORMATION.

SHELLMAR

MOUNT VERNON, OHIO

3115 Empire State Bldg.
NEW YORK, N. Y.

224 South Michigan Avenue
CHICAGO, ILL.

2400 Russ Building
SAN FRANCISCO, CALIF.

their application. On the other hand, in the food, drug, hardware, soft drink and similar fields, the volume of production and the narrow margin of profit per item obviously places fairly severe restrictions upon the manufacturer in his choice of decorative alternatives.

Having set up these general requirements for suitable decorative materials, how shall a packager make his selection from among the vast number of materials which meet all of these requirements to a substantial degree.

It may be wise, at this point, to look to the historical development of packaging several decades ago, when the packaging industries were in a relatively undeveloped state, packagers chose their materials from among all those the world had to offer. Gradually, however, experience taught them to concentrate upon certain materials which were within the right price ranges, which produced the desired visual effects, which stood up well under conditions of use and which lent themselves to the manufacturing or fabricating processes. The suppliers of these materials began to concentrate their attention upon the packaging field and thus specialists in the supply of package wraps, package wrapping materials and similar accessories grew up.

An outstanding example of this gradual separation of originally related fields is seen in the fancy paper industry. Fancy boxmaking papers and fancy wall papers are essentially similar to the layman's eye, yet they differ in many basic essentials. The patterns of fancy boxmaking paper are smaller, surface treatments are different, methods of production have changed and thus two completely separated industries exist today both springing from the same stream.

The moral is obvious. The packager can best serve his own interests by consulting with and—to a large degree—relying upon the aid and advice of material suppliers who have many years of experience in meeting the very specialized requirements of the packaging industries. Occasionally, a packager will find it practicable to utilize one of the non-standard materials—something not designed and produced intentionally for packaging purposes. However, for one successful example of this sort, a dozen instances can be found in which the attempt to be different led to disastrous results.

Taking the situation in respect to fancy boxmaking papers as typical, or the other tentative materials as well, the packager may trace in the paragraphs which follow a course of procedure in selecting those best suited to his own conditions of operation.

Looking upon fancy papers as elements of design, it will be noted that their vast variety offers the designer an extended—if somewhat confusing—degree of leeway. He may select any one of dozens of textures, choosing those which will best achieve a desired effect or best establish a relationship between the product or the product's use and the package itself. His palette offers innumerable colors, fancy papers being available in practically every conceivable shade or combination of shades. As for design and pattern, he may select any one of literally thousands, ranging from simple one-color, undecorated papers to multi-color patterns, seasonal decorations, topical decorations, geometric designs, flower motifs, animal motifs, etc.

Private vs. Public Designs

Where his needs require and where quantities justify the expenditure, papers may be secured representing, in part or in whole, a completely private design. In some cases, stock papers may receive special private embossings which will thus differentiate them from all other embossed papers, although the base paper and the color may be of standard type. In other instances, every step of the fabrication of the paper, from the selection of raw stock, through coloring, printing or lithography and embossing, may represent an exclusive effort.

Paper costs vary within a very wide range. The cheapest grades of light-weight papers, designed for wrapping purposes and using an allover single color coating, may run as low as $4 or $5 a ream. The finest grades of domestic papers, such as some of the real wood veneers or some of the highly embossed, multi-color papers, may run as high as $30 or $40 a ream and papers may be secured at every price point imaginable between these two extremes.

The purchaser and paper user must simply remember the elements that go to make up paper costs. First among these, is, of course, the base paper. This may vary in quality, type and weight. Second is the number of processing steps to which the base paper will be subjected. Thus an ordinary coated stock will cost less than one which is coated and glazed or coated and embossed and these, in turn, will cost less than those which in addition are printed. Furthermore, the number of printing colors obviously will affect paper costs. An additional element affecting paper cost is that of popularity. Obviously, a stock paper which is very widely used, such as one of the conventional Christmas patterns, can be produced in longer runs and hence at lower costs than one of more limited appeal. There is a certain minimum run factor on all paper making machinery and orders below this point, on specially produced papers, will likewise cause costs to skyrocket.

Comparative Costs

Any element of private design, either in paper decoration or in embossing, will likewise tend to raise costs because of plate and makeready charges. For this reason, private designs can seldom be utilized, except by firms having a substantial or continuous demand for a given type of paper sufficient to warrant the expenditure in private plates and embossing rolls and sufficient to justify the mill's carrying a stock of such papers or making a special run of them periodically. The minimum quantity for private papers, in most cases, is 100 reams.

While decorative effects are the primary factors to be considered in choosing a boxmaking paper, a number of other considerations are well worth checking. Samples of the proposed papers should be submitted to the boxmaker in every instance and should be tested by him to determine just how they will work on boxmaking equipment of various types.

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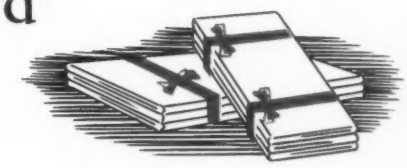

There's a sparkling F.C.C. Ribbon or Cord for every type of container—for packaging foods, dry goods, cosmetics, confectionery, tobacco, liquor, stationery, silverware, etc. These ribbons and cords add real sales punch to *any* product.

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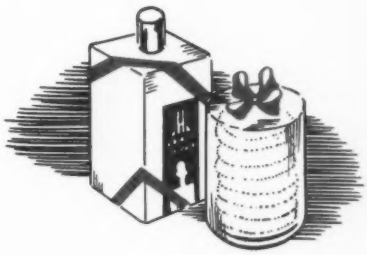

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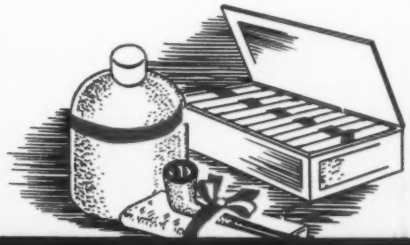

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Fancy Boxmaking Papers

Fancy or boxmaking papers include a wide group of uncoated, coated, metallic, foil and other types of papers designed for use primarily as box coverings, although also applied for other packaging purposes on occasion. While many types of these fancy papers originated from types developed as wall papers, the fancy paper industry has borrowed the best in the technique and tradition of many fields and has contributed many unique developments of its own as well. Thus, today, fancy box papers stand in a class by themselves and the industry which makes them represents a very specialized branch of the paper making and processing field, with a tradition, skill and technique of its own.

In the detailed descriptions and definitions which follow, the reader will find the answers to more specific questions that may arise regarding papers of these types. In general, it may be said that fancy papers provide a means whereby the boxmaker, the packager and the package designer may secure unusually varied effects in box decoration, at a relatively low cost.

Definitions

The following definitions apply to the various types and kinds of glazed and fancy papers:

Uncoated Body Stocks

The kind of paper, such as rag, sulphite, kraft and ground wood, which is coated, embossed, etc.

(a) Antique, natural finish.
(b) Super calendered.

Coated

(a) *Mat Coated:* Clay coated with brushes or other means as it comes from coating machines.
(b) *Brush Finished:* Coated papers whose surface is polished by brushes.
(c) *Plate:* Coated papers which are smooth finished by cold rolls through pressure in a stack calendering machine.
(d) *Friction Glazed:* Coated papers whose surface is polished by heated rolls in a friction calender, friction being produced by the faster rotary action of the steel polishing roll against the slower cotton roll.
(e) *Mica:* Paper whose coating material consists of ground mica crystals which gives a sparkling finished appearance.
(f) *Flint:* Coated papers whose surface is highly polished by rubbing across the sheet with flint stones, a very slow but effective process.
(g) *Waterproof:* Papers coated and then top surfaced with water-proof material, i.e., casein or gums or coated once with color heavily sized or mixed with water-proofing gums.
(h) *Metallics*
  (1) Gold, Platinum and Tints. Casein and pyroxylin coated with ground bronze (gold), aluminum and copper, with casein and other gums or with pyroxylin lacquer; generally stack calendered to produce smooth and brilliant appearance.
  (2) Silver Glazed—"silver coated"—paper coated with "Argentine," a lead pulp which is dull grey in color; then polished to a silver finish by a friction calender.
  (3) Pyroxylin coated with lacquers in bright, dull and pearl effects.
  (4) Flock—paper coated with varnish on the surface of which is shaken or blown finely powdered cotton, wool, rayon or silk commonly known as "Velours."

Half Fine Metallic

Papers are produced by laying patches about five inches square of a thin copper or aluminum alloy on paper which has been coated with an adhesive. The patches are allowed to overlap so as to form a continuous metallic surface and the overlapping edges are brushed to remove any surplus.

Foil

Papers are produced by the application to paper of a continuous sheet of metallic foil, usually tin, aluminum, zinc or their alloys. The foil is adhered to the paper by the use of adhesive (see Decorative Foils, page 162).

Fancy Papers

Papers decorated with one or more colors in mottled, speckled, streaked or blended effects, or in a definite design in any of several processes as for instance: Surface printing by Kidder, wallpaper or other rotary-printing machines; intaglio printing; print or ink embossing; topping, i.e., application of bronze or color to the surface of the raised portion of an embossed paper; two-toned by means of friction or heat embossing; or marked by means of design rollers running against a wet surface either coated or printed.

Cross References: Set-Up Paper Covered Boxes, page 74; Transparent Combination Boxes, page 86; Decorative Foils, page 162; Set-Up Boxmaking Machinery, page 466.

Champion Kromekote

The bright, shimmering surface of Kromekote Box Paper adds new life and charm to the packages it covers. This exclusive, patented Champion product combines extremely high finish with remarkably fine printing qualities. It is made in white, ivory, canary, yellow, orange, primrose, light pink, light red, dark blue, dark green, pink, light blue, light green, and turquoise blue. Here is a covering worthy of the most beautiful boxes for fine products which require fine settings. Use Kromekote Box Paper for brilliant effects that catch the eye and make sales.

The same surface is available in Kromekote Label, white and nine colors, 20 x 26, 30; Kromekote Litho, white only, 25 x 38, 28 x 44, 50 and 60 lb.; Kromekote Postcard, white only, 22½ x 28½, .012; Kromekote Cover, white only, 20 x 26, 23 x 35, .010.

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(a) *Surface Printed:* A rotary process in which oil ink is transferred to the paper from a relief-pattern roller.
(b) *Kidder:* Oil-ink printing from curved plates locked on a roller form and registering each impression as the paper runs beneath.
(c) *Wall paper:* Water-color printing in one or more colors from relief-pattern rollers, one for each color, registered in the running to make the complete design.
(d) *Aniline* stained or printed or both, with rubber rollers and relief-cut patterns—generally with alcohol-gum colors.
(e) *Intaglio or Rotogravure:* Papers printed with an engraved copper roller which has the pattern engraved into the roller by the photogravure process or by the use of a pattern mill. The ink, which may be water color, aniline, oil or lacquer, is wiped off the roller by means of a thin blade set crossways of the roller and the amount of ink controlled by the angle of the blade and the depth of the engraving.
(f) *Print Embossed:* See "Embossed" below.

Embossed

Papers having a pattern effect obtained as follows:
(a) *Regular:* By means of a steel pattern roller and a paper-matrix roller mated together by wetting the paper roller—thus forming the embossing.
(b) *Friction Embossed:* Paper embossed by pressing the pattern against a smooth paper roller run without gears, thus permitting a slight friction effect in the pattern contact—obtained with cold and with hot pattern rollers, the latter being bored and piped for steam heating. The combination of pressure and friction causes a deepening of color in the pattern area.
(c) *Print Embossed:* A paper embossed and printed in one operation by means of the application of ink to the embossing pattern.
(d) *Topped and Embossed:* Paper which is decorated in a two-toned effect by applying color through use of color roller to surface of the embossing.
(e) *Spanished:* Decoration of an embossed paper by means of color applied to the entire surface of the sheet and then scraped off with a blade, leaving it in the varied depth of the embossed surface; in varied tones of the decorating color.

Descriptive Terms

The following descriptive terms are commonly connected with box papers, their sales use or qualities:

Embossing Designs

COMMON: Patterns in common use by many manufacturers of embossed paper. For instance: Skytogen and certain seal-grain moire, basket, Persian lamb and swirl designs.

EXCLUSIVE: There are several hundred different embossing designs, in addition to the common ones, which have been originated or purchased by individual manufacturers who thereby own these designs exclusively. Such designs are frequently protected by registration at the United States Patent Office. Most manufacturers do not desire to copy others' designs, preferring to have exclusive designs of their own. The Glazed and Fancy Paper Manufacturers' Association, 902 Union Trust Bldg., Providence, R. I., maintains a registration bureau of these designs for the protection of its members and to answer inquiries from customers and users.

Fabric Designs: Printed designs in imitation of various fabrics, commonly known as "fabric prints." Embossing design in imitation of fabrics such as rep, linen and similar materials.

Leather Grain: Papers with leather grain designs which are either produced by embossing, ink embossing or spanishing. Common examples are alligator, seal, walrus, caracul, etc.

Marble Agate: Papers with a design imitating polished colored marble. The design is sometimes a printed one, but true marble agate papers are made by floating coloring materials in a viscous bath.

Moire: The name of a large class of embossing patterns which, after the manner of textiles of the same name, give a mottled or watered appearance.

Multi-color: Papers coated, printed or originally made with many colors.

Non-fading: Papers that resist fading when exposed to sunlight. Some colors fade more than others.

Pearl: A paper coated by a special process with crystallizing salts. The crystallization process develops a mother-of-pearl design. This has been largely replaced, in recent years, by the use of pyroxylin which achieves virtually the same visual results.

Ream: 500 sheets is commonly used instead of the 480 which we learned in school. The standard size is 20 in. by 26 in. because these papers are most frequently sold in 26-in. rolls.

Rolls: A roll of plain paper usually contains three reams, but may contain less or more, depending on the weight or bulk of the paper reeled. A roll of embossed paper generally contains two reams, but if design is deep, one ream.

Silver: Papers coated with metallic substances which look like silver; sometimes called aluminum argentine or platinum papers.

Swirl: Designs, both printed and embossed, which consist largely of circular lines or motifs.

Tarnishing: Discoloration of metallic papers caused by chemical action from contact or vapors.

Tissues, Fancy: Tissue paper upon which has been printed a fancy design. Frequently it is embossed with another design. Largely used for gift wrapping.

Trade Mark Designs: Trade marks printed or embossed upon the paper.

Weight: The weight per ream on a basis of 500 sheets listed in various sizes.

Wood Grain: Printed papers with designs imitating various wood grains.

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Decorative Foils

Metal foils are characterized by a rich metallic lustre which, in itself, has obvious decorative possibilities. When this basic characteristic is augmented by the almost limitless color, embossed texture and finish combinations that can be readily applied to metal foils, their capabilities as an aid to package decoration can be readily seen. Furthermore, in making use of one or more of these decorative treatments, metal foils retain their efficiency as protective packaging materials.

Generally, metal foils may be grouped into three classifications: (1) plain and embossed foils, (2) lacquered and printed foils and (3) adhesive mounted or wax mounted to paper or other backing materials.

Plain foil, as the name implies, consists of a thin sheet of aluminum or other metal with the natural "as rolled" finish. Plain foil is produced in various required gauges, ranging from 0.00035 in. up to 0.005 in. with normal bright finish. Dull (matte) finish is also available in the lighter gauges. Because a minimum number of operations is required in the production of plain foil, this is the least expensive type. Where decoration is only an incidental consideration, plain foils will serve this secondary function satisfactorily by lending a distinctive metallic lustre to the package.

Where appearance becomes more of a factor, embossed foil will give a wide range of decorative effects to a package. There are available many standard embossing patterns designed to give a variety of textures and designs. Special patterns can be embossed to produce special textures, identification designs or advertising motifs. For the most part, all-over embossed patterns are applied to the lighter gauges of metal foil. For example, standard patterns for aluminum foil are supplied in thicknesses ranging from 0.00035 in. to 0.0015 in. Either plain or embossed foils can be provided with paper backing.

Lacquered foils serve to combine the element of color with plain and embossed foils; the colors have unusual brilliance and lustre when translucent lacquers are applied over the bright metallic foil. The standard colors and shades are satisfactory for the majority of decorative requirements. Other colors can be supplied if desired. Lacquered foils are supplied with or without paper backing and may be embossed or unembossed. Unembossed lacquered foils are regularly used for milk bottle hoods, coverings for cartons and fibre cans, seals, labels, etc. Embossed lacquered foils find their way into such applications as bottle neck decorations, capsules and wrappers.

To give metal foils their full range of usefulness, both plain and embossed types are available mounted by suitable adhesives to various backing materials. Mounted on the proper grade and weight of backing (such as paper or transparent sheeting), additional strength, rigidity, pliability or bulk may be obtained.

Metal foils, laminated to a suitable paper backing, are finding increasing application as a set-up paper box covering material. The stock is available in weights from 30 to 60 lbs. with plain or embossed surfaces.

A duplex foil board has been developed for tag manufacture with foil facings on both sides of an interior paperboard.

Printing of metal foils (either by direct printing, lithographing or rotogravure method) has become an extremely important factor in widening the usefulness of this type of material as a package decoration. In the case of printed foil wrappers or foil cartons, the packager has an almost limitless number of design possibilities at his disposal by combining printing in full color or fine design, with the background of rich, colorful lustres, and pattern designs obtainable in metal foils. Lithographed and embossed labels for bottles, boxes and other types of containers have been extensively used.

Cross References: Folding and Display Cartons, page 35; Specially Processed Cartons, page 68; Set-Up Paper Covered Boxes, page 74; Decorative Materials—General Considerations, page 156; Protective Foils, page 180; Laminating and Combining, page 193; Metal Foil Bags: Types and Uses, page 210; Embossed Seals, page 310; Types and Functions of Adhesives, page 474.

Acknowledgment is made to C. C. Conner of the Aluminum Co. of America for aid in compiling the data upon which this article is based.

1

2

1. A group of printed and lithographed metal foil labels. Foil is here chosen because of its decorative effect, particularly when used on stock containers. **2.** Embossed and lacquered foil is frequently used as a bottle neck decoration for soft drinks, beer, wines, etc. Photos courtesy of Aluminum Co. of America.

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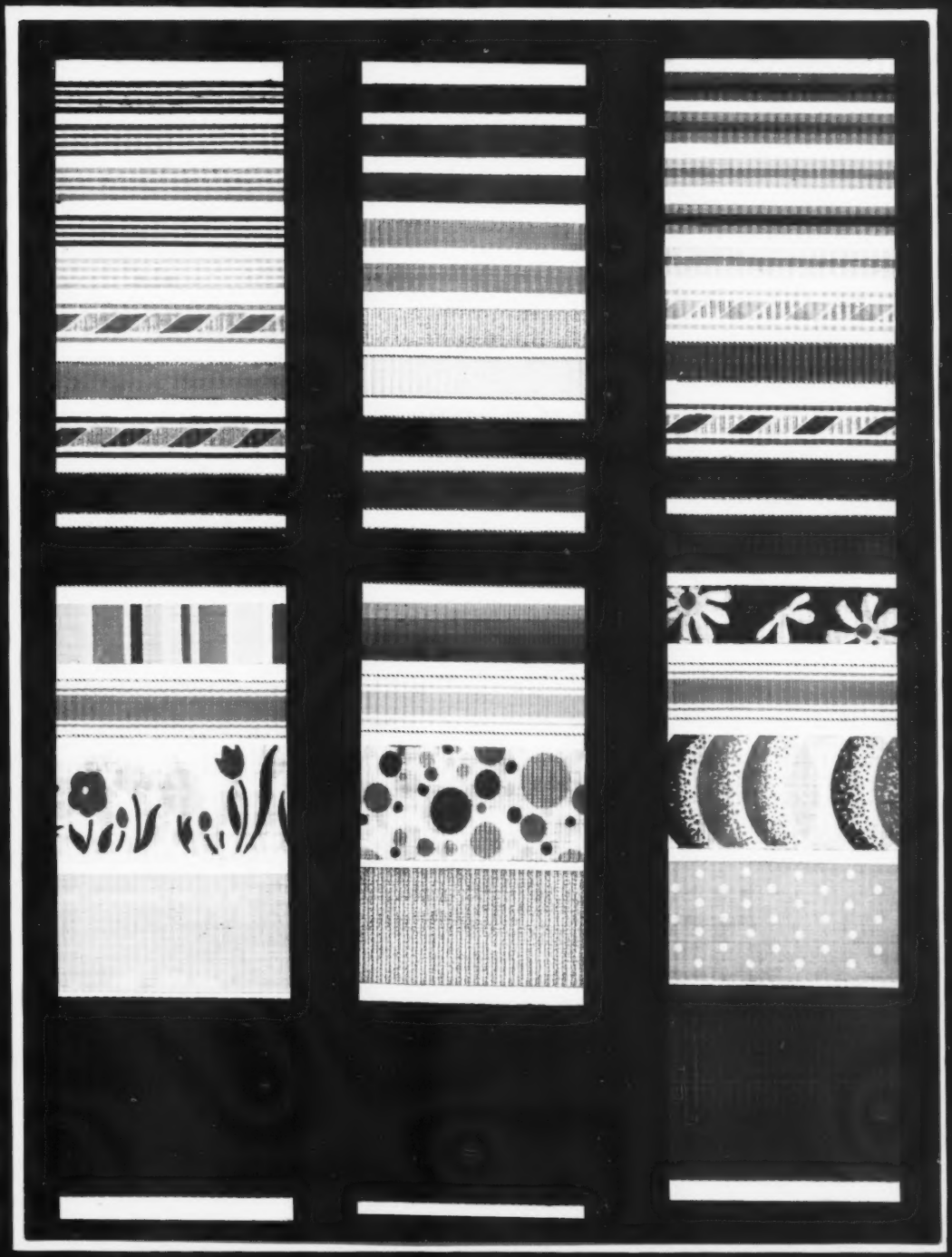

These are merely representative of the several hundred patterns and colorings available from stock. Special colors and designs made to order.

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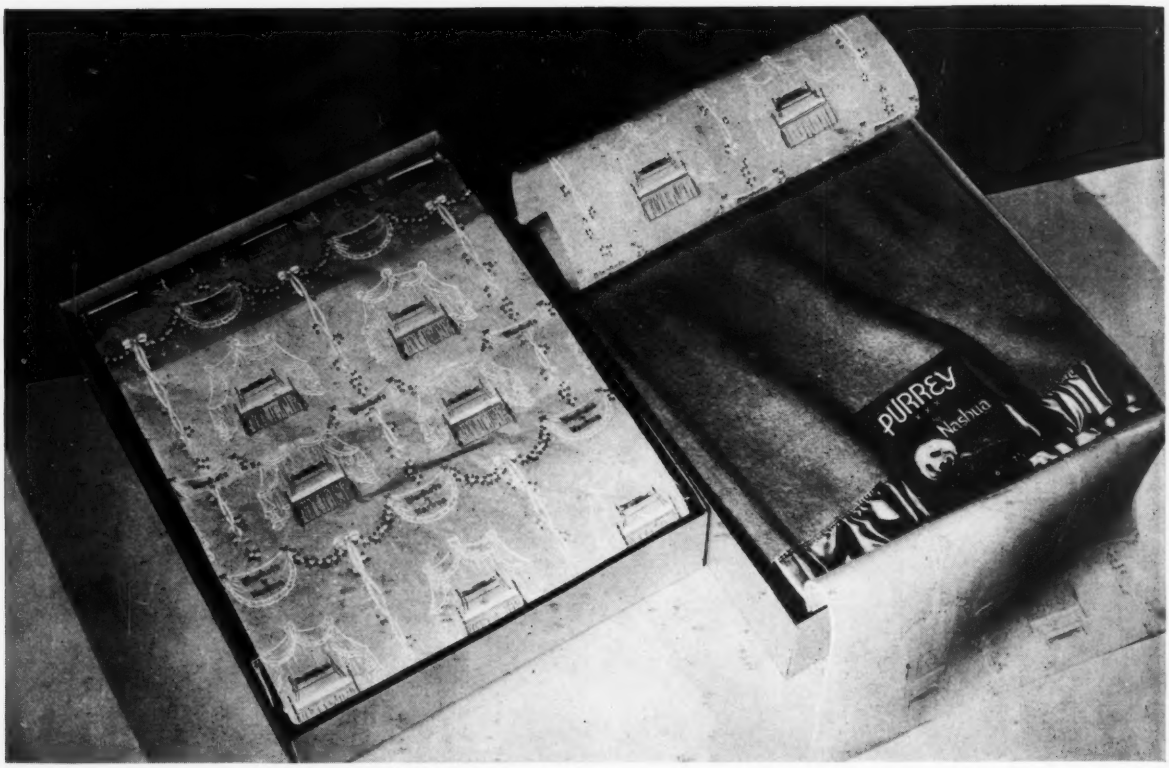

Glassine, printed in white and silver, is used as an inner decorative wrap by the National Manufacturing Co. to supply a crisp, cool note to its summer blanket packages. Courtesy Dennison Manufacturing Co.

Decorative Glassine Papers

While glassine papers are thought of principally as protective papers—grease-resistant and water-repellent—they are frequently used for purely or partially decorative purposes. The smooth, non-porous surface of glassine adapts it to subsequent treatment and the paper is, therefore, frequently embossed or printed to achieve extremely attractive decorative effects. Candy manufacturers use glassines as inner box linings and as inner wraps because these effects can be achieved without sacrifice of protective qualities. The same is true, to a limited degree, in the baking industry and in the textile field, where glassines are used as dust wrappers and to prevent linting, but where their decorative qualities are carefully built up to enhance the appearance of the product.

In other fields, notably the soap industry, glassines are used principally for their protective functions, but even here, embossing and printing are called upon to distinguish the sheet from a purely functional one affording mere protection and to make it a component part of the general package decorative scheme.

Glassine, in the plain and embossed form, is frequently fabricated into bags for use in the decoration of items such as gloves, which are demonstrated to the consumer by the retailer at the sales counter and which must be repeatedly inserted into shelf boxes. Here, of course, the protective function could be performed by virtually any material. Crisp, semi-transparent clean-looking glassine is frequently utilized because it adds a suitable decorative note.

For bread packaging, glassines form a substantial portion of all the wraps utilized, with another large segment of the total supply being represented by combinations of glassine and transparent cellulose. The ability of the material to take attractive printing in accurate register and to hold the attractiveness of the design through all stages of high-speed machine wrapping and handling in shipment and store, provides a major reason for its utilization.

Cross References: Decorative Materials—General Considerations, page 156, Fancy Boxmaking Papers, page 160; Decorative Tissues, page 172; Protective Glassine Papers, page 184.

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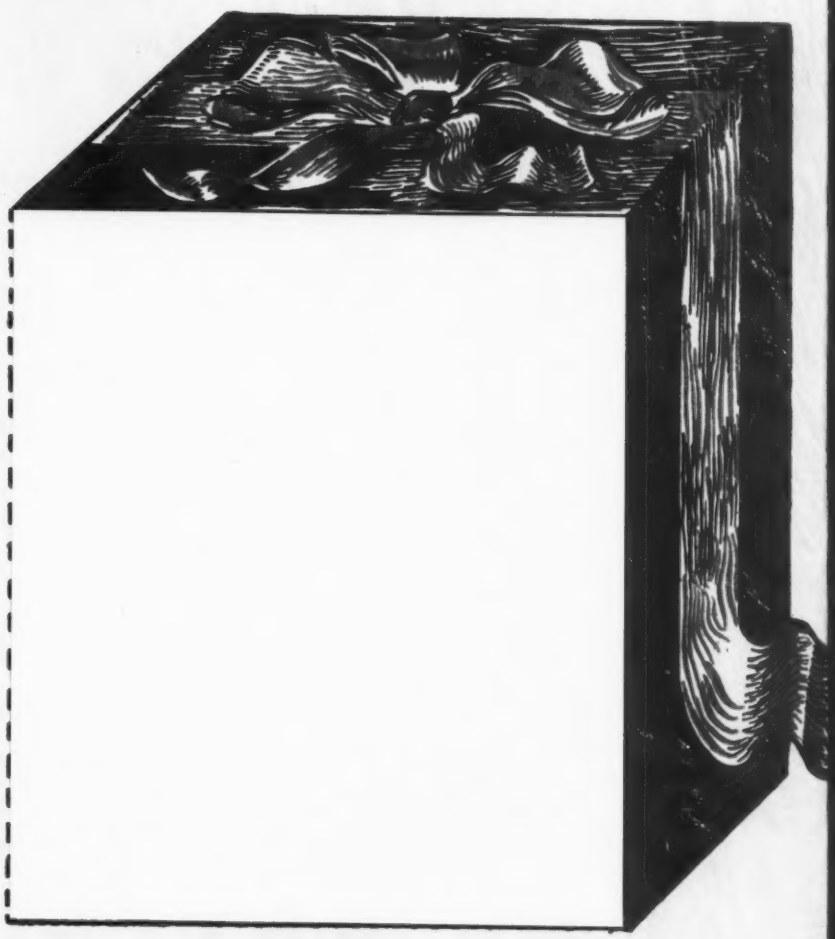

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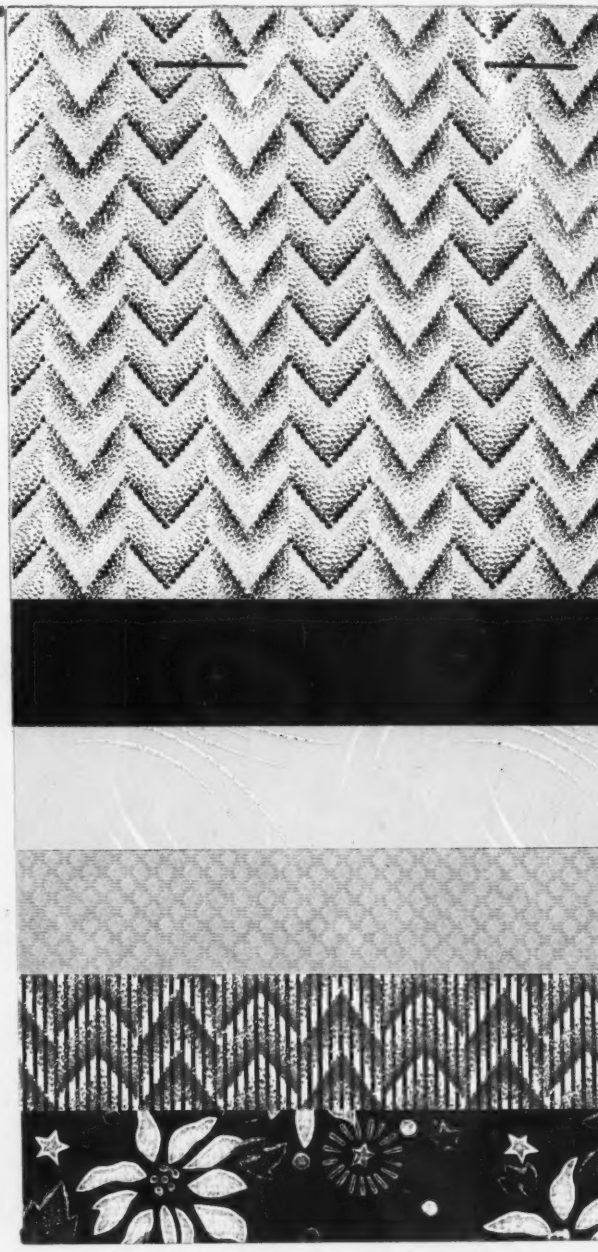

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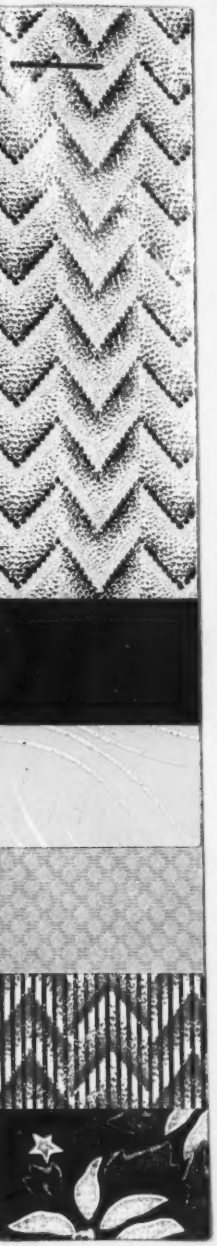

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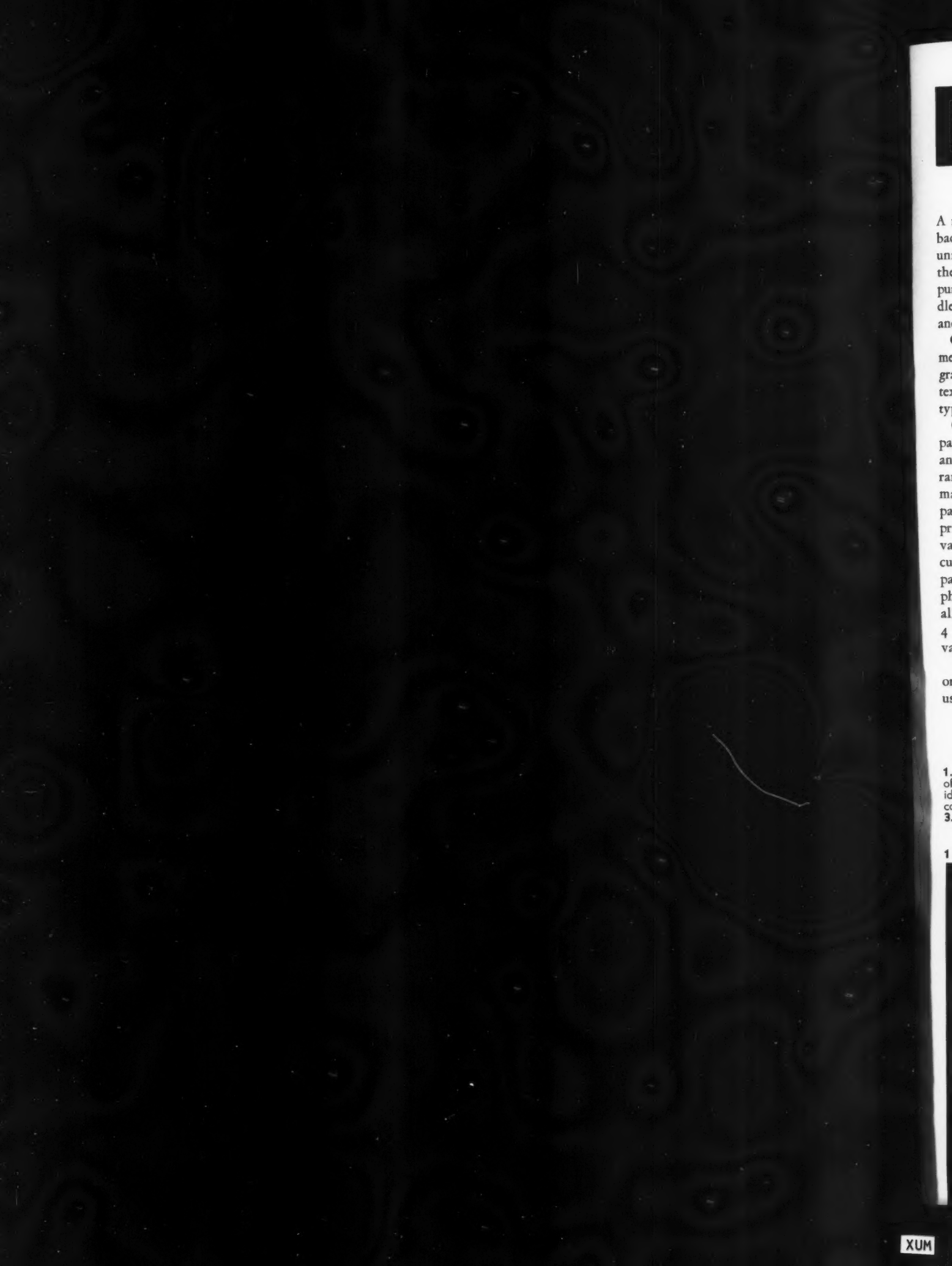

Display and Background Papers

A number of materials have been developed to serve as backgrounds or supplements to printed and lithographed units for window display. Best known among these is the long familiar crepe paper, a material adapted to the purpose because of the ease with which it may be handled, its relatively low cost and the wide range of colors and varieties in which it is available.

Other widely used papers include plain or embossed metal foils, imitation leathers, papers bearing photographic reproductions of textiles, wood grains and other textured surfaces, flexible corrugated papers and some types of fancy box papers.

One relatively new process involves the printing of papers in continuous rolls with a design as long as 7 ft. and as wide as 3 ft., making possible attractive panoramic effects for window backgrounds. The process may be applied to heavy-weight crepe paper or to a paper with a flexible corrugated backing. The same printing method is also used for the preparation of valances for windows, the papers frequently being die-cut to provide an irregular valance edge. Panoramic papers, using color reproductions of either drawings or photographs, are also widely utilized. These are usually made in two- or three-color effects, in rolls about 4 ft. in height and 25 ft. in length, and supplied in various thicknesses of stock.

Single faced corrugated board with decoratively colored or printed papers used as the corrugated face is frequently used for display panels and to form columns and other structural effects. These materials are available in solid colors, metallic finishes and imitation marbles, woods and corks. For the convenience of those who build their own displays, one manufacturer provides a corrugated paper with outline letters and numerals printed on the backing to facilitate cutting of signs.

Corrugated display backgrounds, when supplied in conjunction with lithographed or printed displays, have a definite advantage in that they may be rolled into compact form for shipment without damage to the display. The corrugated materials are frequently used in conjunction with stenciling and air-brush work, particularly where the quantity required is comparatively small and where the size of the display would make plate cost for printing or lithography prohibitive.

Double faced corrugated with colored surfaces is frequently used for structural displays. The material is available in many colors and with surfaces adapted to the silk screen process.

Some companies, notably in the liquor industry, have found it practical to pre-print or pre-lithograph corrugated papers and then form them into the corrugated surfaces of single faced corrugated board, thus creating an easily shipped, flexible unit on a mass production basis.

Cross References: Displays: Design, Distribution and Installation, page 346; Lithographed and Printed Window Displays, page 351; Floor Stands and Island Displays, page 356

1. Double faced colored corrugated board lends itself to large area displays because of its structural strength. The material is available in many colors and the surface is ideal for silk screen decoration. Courtesy Capex Corp. **2.** Printed crepe valence combined with decorative crepe drapes. Photo courtesy Dennison Manufacturing Co. **3.** Flexible corrugated material as used in conjunction with crepe papers. Photo courtesy The Reyburn Manufacturing Co.

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1. Rubber hydrochloride sheeting—a relative newcomer which has been widely adapted for certain purposes—is printed by methods essentially similar to those developed for printing earlier transparent materials. Courtesy The Goodyear Tire & Rubber Co., Inc. **2.** Printed meat wraps. Photo courtesy Nashua Gummed & Coated Paper Co.

Printed Transparent Sheeting

In the order of their development, there are three major processes of printing on transparent cellulose presently in use. These are:

1. Letterpress, which employs relief engravings and oil inks.
2. Gravure, in which impressions are made from etched cylinders with lacquer inks.
3. Aniline, using spirit inks and, usually, rubber printing plates.

Each method possesses certain advantages, as well as certain limitations, which will be briefly considered.

Letterpress printing: This is the best known of all printing methods and is the one by which the first successful printing on transparent cellulose was accomplished. However, due to the temperamental nature of the film, really successful commercial production was not attained until roll-fed presses were employed. These required the addition of many devices, such as means of continuous control of the web, or sheet, during the printing operation, to insure registered printing of successive colors. Several types of roll-fed presses are presently in use. In some types, a number of printing or plate cylinders are arranged around a central platen cylinder and the printing is done on a continuous web, which is then delivered in the form of either sheets or rolls. Other types of presses cut the sheet to a predetermined size before the printing impression is made.

Letterpress printing may be done on either surface of the cellulose film and, where it is not objectionable for the printed side to come in contact with the product to be packaged, the use of reverse or underside printing permits the retention of the full gloss, or sheen, of the cellulose, thus enhancing and vivifying the colors of the inks. Letterpress printing is also employed almost exclusively where the printed cellulose is to be used on moist or greasy objects, notably on meats and fish.

Gravure printing: This process came into use only after letterpress printing on transparent cellulose had become fairly well standardized and its limitations had been explored. The inks used are of the fast drying, lacquer type, which not only eliminate the use of slip-sheets, but permit the printer to obtain a degree of opacity impossible with oil inks, as well as to print color upon color in a continuous operation. The pigments used in gravure inks permit also the obtaining of very brilliant full colors and shades, although only a limited range of tone effects are at present available.

Since gravure printing can only be done through the use of intaglio-etched cylinders, the cost of engravings for this process is relatively higher than for either letterpress or aniline printing and the combination of more than one design on a set of cylinders is impossible, unless all of the designs can be executed within the limit of the

Acknowledgment is made to T. W. Koch of the Shellmar Products Co. for generous aid in the preparation of the data upon which this article is based.

Cross References: Color and Reproduction Methods, page 16; Transparent Wrapping Sheeting, page 188; Laminating and Combining, page 193; Transparent Cellulose Bags, page 206; Merchandise Envelopes and Packets, page 218; Bags: Special Types, page 228.

RESEARCH *and* PAPER for PACKAGING Problems

Unusual packages, now in use, are the result of research by S. D. Warren Company *in cooperation with converters of paper*

PAPERS FOR FREEZING TEMPERATURES. Papers for wraps and containers that must be subjected to frigid temperatures have been developed and are serving well.

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number of colors available on the press and unless each design, in repeat runs, can be produced at the same time and in the same proportion as to quantity as the original run. At present, presses are available where as many as seven colors may be produced at a single run.

The gravure method produces the highest type of printing at present available on transparent cellulose and particularly attractive effects are obtained through the use of reverse printing. Halftones can be satisfactorily reproduced, provided the tone work can be underlaid with a neutral color, such as white. Gravure printing is not recommended for use where the product to be packaged is greasy or has a high moisture content.

Aniline printing: This type of printing is the latest to come into use on transparent cellulose. Because it is generally done through the use of rubber, rather than metal printing plates, and because it employs fast drying inks, eliminating the necessity for slip-sheeting, it was originally hailed as a means of producing printed cellulose more economically than the older processes. However, the limitations of the processes and inks originally employed made aniline printing less satisfactory from the standpoint of package appearance and users of printed cellulose were loath to adopt it, even at somewhat lower costs. Since aniline printing was originally introduced, much progress has been made, notably within the past year, in improving the results obtained and some highly creditable work is now being turned out by this process. Naturally, the improvement of the process involved the use of more expensive materials and equipment and the cost of aniline printing today is probably on a par with that of letterpress.

Tone work in aniline printing is possible only to a very limited extent and its use on moist or greasy products, particularly foods, is somewhat questionable. It does give excellent opacity, brilliant colors and, particularly in surface printing, a lustre that is superior to that of either letterpress or gravure.

The development of methods of printing transparent film in continuous rolls has contributed largely to the expanded use of such wrappers in mechanical packaging. Starting with the wrapping of bread, this application has spread into many fields. Controlled cut-offs made possible by the use of photo-electric cells permit of "spot" wrapping printed film on cartons or open faced trays. Photo-electric cells also permit the use of printed transparent rolls on machines which automatically form tubes, fill a pre-determined amount of product and deliver individual completed packages, crimp-sealed top and bottom.

General Information

Tints: Both gravure and aniline inks may be used in producing tints on transparent cellulose. A wide range of colors is available and the tints do not impair the gloss of the film, and alter its transparency only as the color of the tint reacts on the color of the product packaged. Letterpress tints are generally unsatisfactory, being inclined to muddiness.

Opacity: As mentioned in preceding paragraphs, gravure and pigmented aniline inks produce impressions of greater opacity than letterpress, although a degree of opacity suitable for many purposes can be obtained by the latter process.

Metallics: The gravure process is pre-eminent for printing metallics. Brilliance or opacity can be obtained with a single impression, although two layers of color may be employed where extreme opacity is desired. Letterpress metallics are very satisfactory in surface printing, where the metallic may be underlaid with a sizing, as of yellow in the case of gold, or white in the case of silver. Where reverse printing is employed, letterpress metallics cannot be underlaid and are correspondingly lacking in opacity. Satisfactory metallics for aniline production have not as yet been developed.

Reverse printing: All three printing processes may be employed to produce reverse printing, although letterpress is inferior to either gravure or aniline for this purpose, except where solid lays of full color are used.

Register: Where fine register is required, the letterpress process is superior to either of the others. The use of metallic plates, giving sharp, controllable register, permits the production of effects not possible with either gravure or aniline. Where the design is such that color may be superimposed on color, register often is of negligible account in gravure or aniline work.

Tone or screen work: Bendays and halftones are well within the range of most good producers of letterpress printing on transparent cellulose. Halftone

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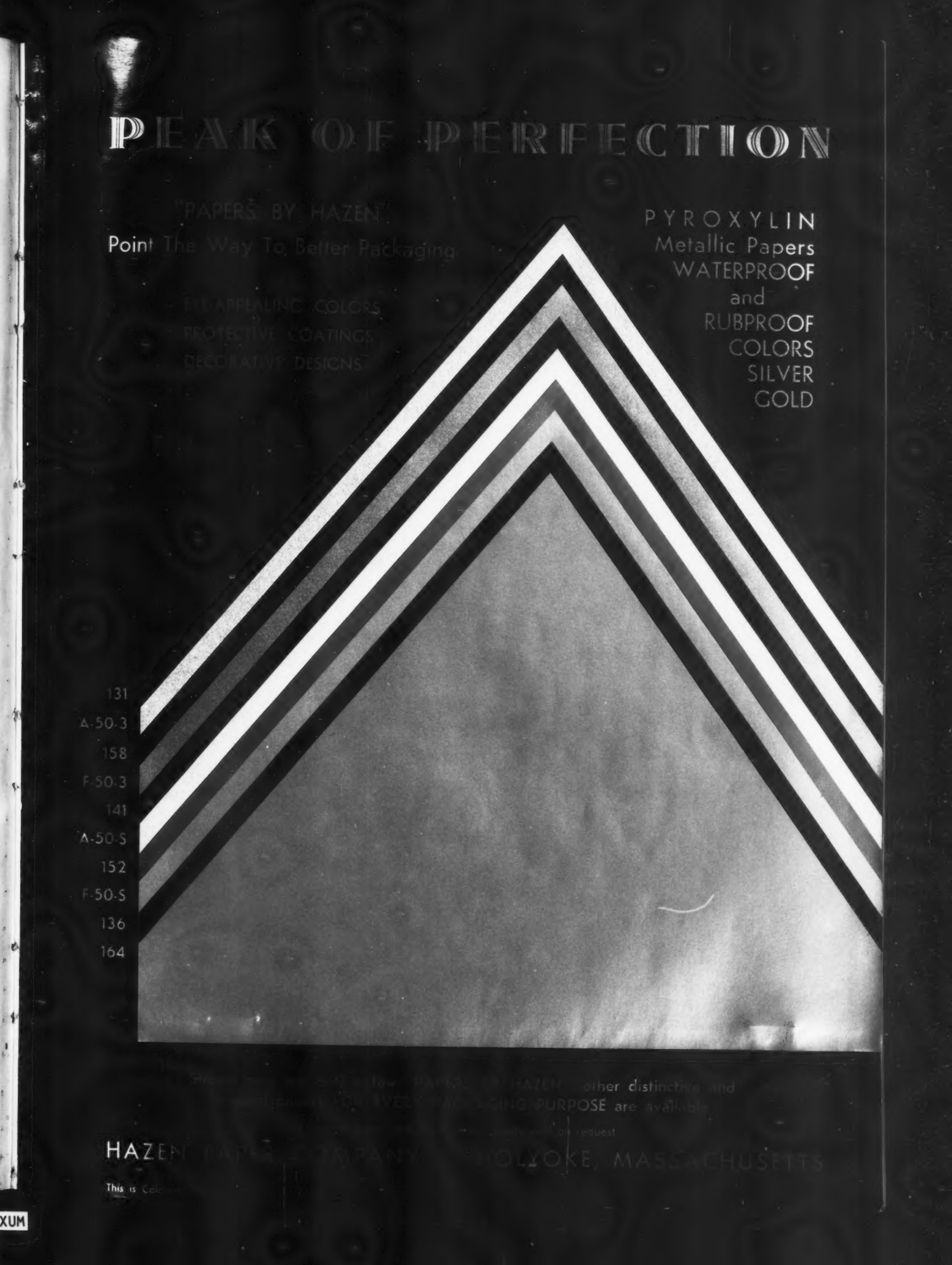
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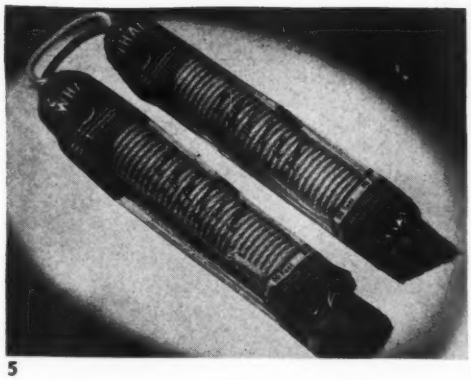

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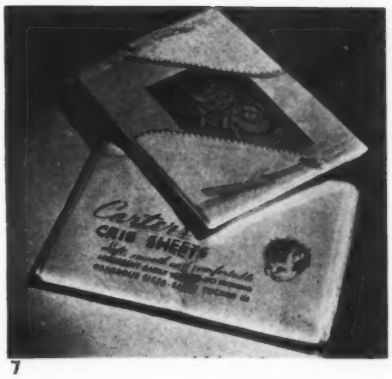

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work is possible to a considerable degree in gravure, with a limited range of benday screens or stipple effects also available. The employment of such effects in the aniline process is definitely limited to date.

With the amount and character of the research work now going forward in the field of cellulose printing, it is not too much to expect that four-color process work will eventually be done on this material.

Package Forms

Printed transparent cellulose is available in a variety of forms, the better-known of which are listed below:

Sheets: These are available in any type of film, printed in from one to six colors, in practically any size.

Rolls: Continuous printed rolls of any type film are obtainable in widths ranging from 1/4 in. to 36 in., printed in from one to six colors. Printed designs may be continuous or may be spot-registered for use on automatic packaging machines, where the printed design is accurately located on the package by means of a photo-electric cell device or an "electric eye."

Bags: Single or double wall bags of transparent cellulose, printed in from one to six colors are available in flat, square and satchel bottom styles. Nearly all types of film may be employed in their construction. Sizes range from very small bags, in the flat type, up to 10 in. by 18 in. in the satchel bottom style.

Envelopes: Both die-cut and roll-cut styles are available in wide range of sizes with either side or end openings and with printing in any number of colors up to six. Most types of transparent cellulose can now be successfully fabricated into envelopes.

Specialty packages: Tubes for cigars and other slender objects, such as tooth brushes, are available, printed in as many as six colors and in most types of film. Other packages, combining printed cellulose faces with backs or affixed pieces of board or other material, may also be had. Sheets or rolls of printed cellulose, affixed at one or both sides to corresponding sheets or rolls of foil, glassine and other materials, are available. Other types of packages employ sheets or rolls of printed cellulose in combination with folding cartons or with fibre plates or trays; in some instances, such combination

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3. Transparent cellulose with printing on underside of sheet forms a stain-proof label for this olive oil can. **4.** Printed transparent bags have achieved adaptation for almost an infinite number of products. Photos courtesy E. I. du Pont de Nemours & Co., Inc. **5.** Two transparent bags are here used to protect so "unlikely" an article as sash cord. Photo courtesy Thomas M. Royal & Co. **6.** Shredded potatoes form the background for this printed transparent bag. Photo courtesy The Dobeckmun Co. **7.** Printed acetate wraps are frequently used for textile products. Photo courtesy Celluloid Corp. **8.** Brilliant color printing in reverse is used to form this holiday box wrap printed on acetate sheet by Shellmar Products Co. Photo courtesy Celluloid Corp.

packages are supplied with retaining rings or other essential parts to make a complete package.

Laminated printed cellulose: This comparatively new development is treated at greater length elsewhere in this book. For the purpose of this article, it may be said that printed cellulose, laminated to a variety of base materials, is available in sheets, rolls, specific types of bags and folding cartons.

Window faced wraps: These have been developed essentially as a means of combining the advantages of opaque and transparent materials for wrapping purposes. They are formed by pasting together continuous alternate strips of paper and transparent film. In most instances, moisture-proof cellulose and grease-proof glassines are combined. They are most widely used in the baking industry and for the wrapping of candies, meat products, etc. The continuous strip material is also used in the formation of window faced bags.

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A group of tissue wrapped gift boxes showing the wide variety of effects which can be achieved in tissue printing. In addition to a wide range of full tones and pastel shades, tissues may be printed with metallic inks and may be embossed. Photo courtesy Chicago Printed String Co.

Decorative Tissues

Tissues are available for decorative wrapping purposes in both white and colored grades. The white type is usually a full bleached tissue made of all-sulphite furnish known as No. 1 White. A No. 2 White, containing about 40 per cent ground wood pulp or a manila grade, is frequently used, particularly where protection takes a primary position over decoration.

Decorative tissues are available in a very wide range of printed patterns. Water-color inks are frequently used, being applied by offset lithography. Oil and aniline inks are also used. Where bronze, gold or silver are to be used, water-color or aniline inks are usually specified since these metallic colors can more easily and effectively be applied over water-color or aniline inks than they can be over oil inks. Decorative printed tissues are available in a water-proof form, the inks used being rub-proof, spot-proof and moisture-resistant.

Tissues are also available in a waxed form for use in products requiring grease resistance. Both plain and waxed tissues are frequently used in shredded form as a protective and decorative packing for such items as Easter candies. Another important use for tissue paper is in the wrapping of merchandise at the point of sale in the retail store. Here, appearance is of primary importance and tissues are frequently imprinted in attractive and colorful designs with holiday patterns, store name imprints or stylized patterns, which the consumer can readily identify with the retail establishment involved. Printed or embossed tissues are frequently used by box-makers for fly leaves for hosiery packages and similar containers. Other volume consuming industries include the liquor trades, which use tissues as bottle wrappers, and fruit and vegetable packers who use colored tissue—frequently with brand name imprints—as individual wrappers for fruits or vegetables packed in crates. The most familiar examples of this type of use of tissue papers are to be found among apple packers and orange packers.

A number of manufacturers put up decorated tissues as gift wrap papers for consumer purchase and use. Tissues used by manufacturing packers may be secured either in roll form or sheet form.

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TAGS Take this leaf from the Dennison Tree of Packaging and you'll take a leaf from the book of many a Dennison customer. Tel-U-Tags are helping them increase their sales in nine distinct ways. What *are* those nine ways? The new Dennison story on Informative Labeling will tell you. Turn the page and then write for your copy of "If You Could Only Be at Every Point of Sale."

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Merchandising would be comparatively simple if you could personally attend to every sale. That being impossible, the next best thing is to make sure your sales story is told the way *you* would tell it. A Tel-U-Tag does just that. Tel-U-Tags give factual selling information, turn specifications into selling features. Dennison can help you develop such a tag for your product. When you write for your free booklet, why not ask to have a Dennison representative call, too?

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Leatherette and Fabric Materials

For semi-permanent and permanent use containers, a group of materials of widely varying appearance, but commonly known by the name of leatherettes, have long been utilized. These are usually formed of a cloth base coated with rubber or pyroxylin, vulcanized or dried and then embossed. Variations in the basic cloth, the coating material and the embossing permit of an extremely wide range of weights, colors and effects. Within this group, the pyroxylin coated fabrics are perhaps the most widely used for packaging purposes. Cotton cloth of various grades provides a principal base material, although non-woven fibre and paper bases are also used.

The base is first inspected and (in the case of cloth) dyed in continuous-run dyeing vats. The dyed cloth then goes to a coating machine where it is moved by an endless conveyor past the coating applying mechanism. The coating "dope"—a heavy syrup-like mixture of nitrocellulose, pigment, solvents and, in some cases, oil—is applied in an even coat to the fabric by a regulating doctor knife. A minimum of three and sometimes as many as 20 coats are applied to each web of cloth. The conveyor then carries the cloth through a hooded drying unit where heat drives off the solvents. These are usually recovered and re-used. At the far end of the machine, the coated fabric is rewound, inspected and then passed to the embossing machines. These are of two types, the flat bed press and the roll press. On the flat bed press, used principally for shorter runs, steel engravings are used for the upper platen. The female die is made for each engraving by inserting a heavy sheet of paperboard and pressing until the design is firmly imprinted. The principal manufacturers have gradually accumulated large libraries of these dies and can therefore supply a wide range of embossings.

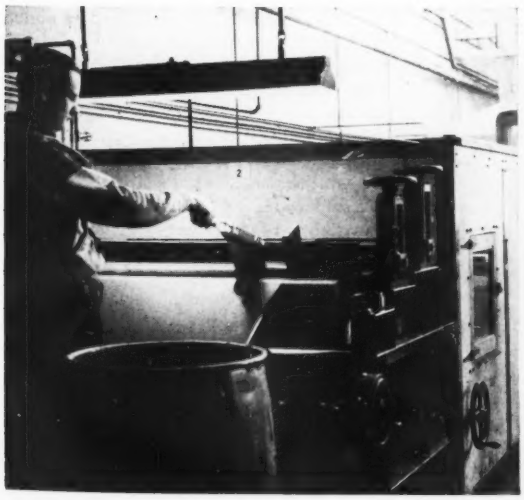
Embossing is performed by closing the press intermittently on successive sections of the fabric. The platen is heated by steam to a temperature of approximately 280 deg. F. Large runs are usually handled on roll presses where the engraving is on a cylinder and the sheet moves at a fairly rapid pace. The cylinders are far more expensive than the flat bed engravings and hence can be used only when the length of the anticipated run is sufficient to insure amortization of the more expensive die. Cylinder embossing has the advantage of printing a continuous pattern, whereas sheet embossed cloth shows a break where successive embossings meet (usually every 26 in.).

Artificial suede is made from rubberized cloth to which a thin coating of rubber cement is applied. The cloth is sprinkled with finely divided cotton fibres dyed to the proper color. Beaters, in the form of ropes tightened by spring action, agitate the sheet from the bottom, causing the fibres to stand on end until the rubber cement hardens. The sheet is then vulcanized and the final result is a product closely resembling fine suede.

Leatherette materials, when used for boxmaking, may be re-embossed with special designs in the boxmaking plant. Such re-embossing does not necessarily destroy the basic embossing described above. The material may also be sprayed or pigmented, roll leaf stamped or otherwise decoratively treated to create attractive effects.

Acknowledgment is made to John Swenehart of the Atlas Powder Co., Zapon Division, for generous aid in the preparation of data for this article.

Cross References: Permanent and Re-Use Boxes, page 94; Specialty Metal Containers, page 246; Set-Up Boxmaking Machinery, page 466; Types and Functions of Adhesives, page 474; Roll Leaf Stamping and Embossing, page 506.



Left. Close-up of infeed end of coating machine. Coated fabric passes through steam heated oven. **Right.** Platen press embossing machine applying pattern to coated roll of fabric. Photos courtesy of the Atlas Powder Co., Zapon Division.

Decorative Ribbons and Ties

A number of materials are available for the decorative tying of packages. The use of such ties has measurably increased in recent years not only in the gift field, where these materials have always occupied a prominent place, but in the candy, cosmetic and textile fields and in a number of other industries.

A decorative tie, to be acceptable for packaging purposes, must offer a high degree of beauty plus strength, ease of tying, resistance to soiling and resistance to wear in transit, on display and in the home.

Cotton Ribbons

Printed cotton ribbons are available in all widths from the narrowest to well over an inch. They may be had in several hundred stock patterns or made to order in any color or combination of colors and in any design. Thus patterns can be made to match or complement designs or color schemes of package wraps, box covers, etc., or for direct application as a tie over textile products, particularly where the latter are to be used in transparent wraps or transparent rigid containers.

Since designs can be made to include company names, trade marks, etc., ribbons of the cotton type have achieved very wide adaptation in retail packaging as a form of inexpensive advertising. As purely decorative ties, or as advertising ties, they have likewise achieved wide usage on factory finished packages, particularly for merchandise for gift selling.

Fabric Ribbons

Ribbons of silk, satin and other fabrics are occasionally used for packaging purposes, although their high cost and the introduction of less expensive means of achieving equally attractive effects has tended to limit their use. They are being used, more frequently, as "made-up" ribbons with edgings of colored cellulose or, occasionally, metal foil.

Cross References: Set-Up Paper Covered Boxes, page 74; Permanent and Re-Use Boxes, page 94; Decorative Materials—General Considerations, page 156; Fancy Boxmaking Papers, page 160.

We are indebted to R. H. Bayer, Fibre Cord Co., R. L. Heard, Chicago Printed String Co., and N. J. Strauss, Freydberg Bros., Inc., for information and aid in the preparation of this article.

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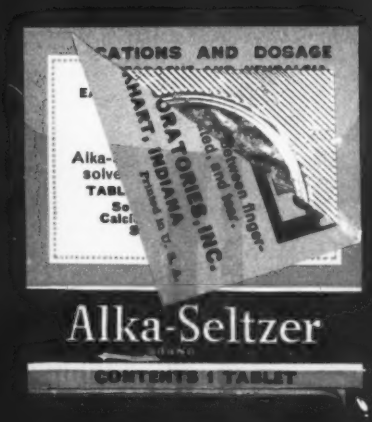
1. A group of ribbon-tied packages showing the wide versatility of these materials as a decorative medium. In the upper right hand corner may be seen a Christmas pattern of ribbon. The package in the upper left hand corner is a stock pattern suitable for year-round use. Ribbon ties are frequently used on set-up boxes and rigid transparent containers to provide an effective decorative note, as demonstrated in the two instances in this illustration. For textile products and products grouped under a transparent wrapping, narrow ribbon bands frequently provide an eye-compelling decorative note while serving to hold the product in place. Photo courtesy Chicago Printed String Co.

IF *Moisture Change* AFFECTS YOUR PRODUCT..



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HEAT-SEALED PACKAGES made of Alcoa Aluminum Foil are an important new development in packaging. These amazing, low-cost packages are:

1. **Air-tight**
2. **Vaporproof**
3. **Moistureproof**
4. **Lightproof**

Products whose moisture content must be kept constant can be maintained in perfect condition until use by means of heat-sealed Alcoa Aluminum Foil. Moisture can't get in or out. Light and mold can't reach the contents.

The packaging operation is simple, rapid, economical. Webs of Alcoa Foil, combined with a heat-sealing medium, feed into an automatic machine which fills the packages, heat-seals all the edges, and, if desired, affixes a flap label.

The packages are easy to open by simply tearing the foil or breaking the seal. They're convenient, too; small and flat, handy to carry in pocket or purse.

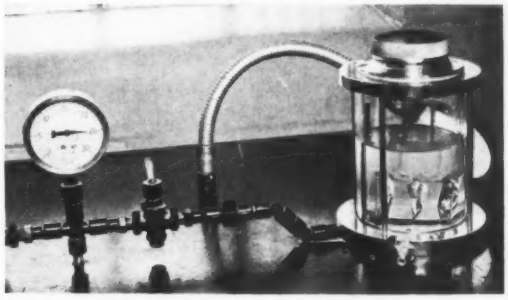
It is possible to produce small envelopes, pouches, and bags to protect a great variety of products from not only air, light and moisture, but spores and insects as well.

ALUMINUM COMPANY OF AMERICA, 2150 Gulf Bldg., Pittsburgh.

. . .

Many other types of Alcoa Aluminum Foil are also available for all packaging purposes—loose wraps, bags, box coverings, etc. It comes plain or embossed, lacquered or printed, unmounted or mounted on all sorts of paper or transparent sheeting. Alcoa Aluminum Foil is economical, attractive, easy to use. It is non-toxic, friendly to food.

These three vastly different products stay "just right" in heat-sealed Alcoa Aluminum Foil. Tobacco doesn't dry out or become soggy. Instantaneous coffee retains its flavor, never grows stale or rancid. And Alka-Seltzer stays dry and fresh, even in steamy, tropical climates. This remarkable, low-cost package is a real "comer."

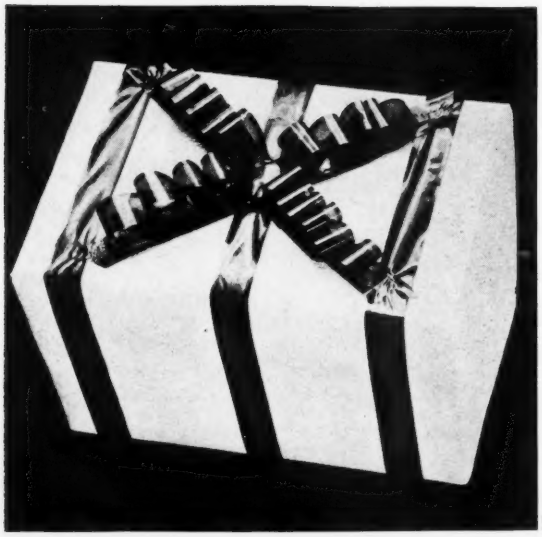


Here's proof of the strength and tightness of heat-sealed Alcoa Aluminum Foil. In periodic production control tests at Miles Laboratory, Inc., foil packets are immersed in water and a 25-inch (minimum) vacuum is drawn in the jar to test the tightness of the seal. The air inside expands the metal walls but does not leak through the sealed edges.

ALCOA ALUMINUM

ALCOA ALUMINUM FOIL

XUM



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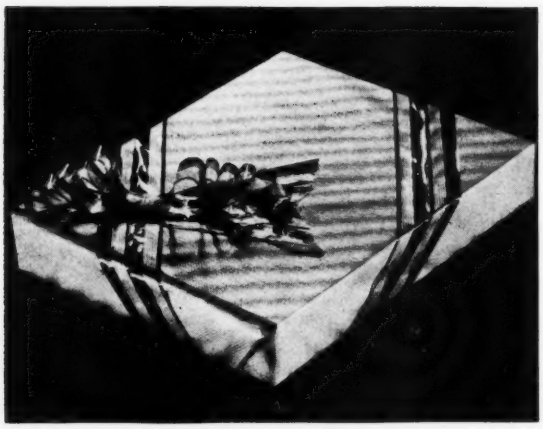

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2. Plain tinted transparent cellulose ribbon with turnover edges forms an attractive package when ingeniously tied. **3.** Careful choice of ribbons and wrappings frequently serves to enhance the appearance of both and to produce an outstandingly attractive gift package. **4.** An almost infinite variety of colored and metallic effects are available in standard ribbon patterns. Photos courtesy Freydberg Bros., Inc.

Cellulose Ribbons

Since cellulose is manufactured and printed in rolls, it was but natural that the addition of a slitting process should be thought of as a means of achieving a ribbon form. Today such ribbons are decorated, cut, treated and folded to form a tie with reinforced edges, great strength and beauty. Multicolor effects are practically unlimited. Many stock patterns are available and private patterns can be made to meet individual requirements with comparatively low set-up costs.

Cellulose ribbons may be had in completely transparent form, in tinted transparent types, in opaque types, printed designs and fabricated in combination with foil, fabric and other materials. Widths range from $1/4$ in. to 4 in. and more. The turned-in edges prevent fraying and the smooth surfaces of the cellulose base avoid soilage. Since the cellulose is sterile, such ribbons may be used in conjunction with food products.

Rubber Derivative Ribbons

A new development involves the fabrication of Pliofilm, a rubber derivative sheet material, into ribbons. In color and decoration, these closely resemble the cellulose ribbons. In addition, they are water-proof and may thus be used for various purposes for which the ordinary types would not be applicable.

The ribbon has high resilience and high resistance to tearing, may be tied into tight knots and then untied and smoothed out without showing wear. The material may be stitched, glued or serrated on one or both edges and thus lends itself to a number of applications where other materials have not been successfully applied before.

Cellulose Cord

Cellulose cord utilizes a core of rayon, cotton thread or wire around which a cellulose film has been twisted. The material is available in many colors, a number of multi-tone effects and in various gauges. In addition to use for box ties, this material is used for neck tying of cellulose and fabric bags and for tag tying.

Pre-Tied Bows

Ribbons of various materials are available in bows, pretied and with any specified length of flat ribbon extending from either end. Such bows may be attached to the package by adhesive, staples or other medium, at a pronounced saving over methods involving tying of elaborate bows directly on the package.

Now they think I'm a Miracle Man!

I'm certainly aces around this establishment now and just two short months ago the chances for my success looked very remote indeed. All because I delivered the well-known goods at the chosen moment . . . P. S. I had a little expert help that you can get, too, as you will see.

OUR PRODUCT LOOKED PRETTY DRAB, no appeal, which was all wrong because it's a darn good item. We tried everything to remedy the trouble; nothing seemed to work.

SALES WEREN'T WHAT THEY SHOULD BE, it seemed our competitor was getting all the gravy. And Boy, if you could have heard our sales manager roasting those salesmen, whew!

THINGS LOOKED DARK FOR ME what with the boss beginning to look past me most of the time . . . either I get an idea or back to the farm . . .

THEN A MILPRINT MAN CALLED on me . . . we discussed our problem and for once I had a feeling things were going to happen . . . for the better.

SURE ENOUGH, doesn't this guy show up with the niftiest package ever . . . I could see the boss was plenty tickled . . . me too—

OUR SALES SKYROCKETED all over the country. Reports were that customers couldn't get enough . . . you should see our books, oh boy!

I'M THE OLD MAN'S FAIR-HAIRED BOY now. What's more, he seems to think I'm the right companion for his daughter . . . so does she!

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Protective Materials — General Considerations

Protective packaging cannot be completely separated from decorative packaging. The two are inescapably entwined. Nonetheless, certain of the wrap and foil materials of packaging have specialized protective uses and are utilized primarily to achieve certain protections for packages. These materials and their application to packaging are described in detail in the articles which follow.

To properly select, however, from among these various materials, that one material which is best suited to each particular job requires an understanding of the protective functions themselves. Let us consider, therefore, the package exclusively from the viewpoint of protection. We find it capable of affording four general types of protection for a product on its path from the factory or source of supply to the point of its final consumption by the ultimate user.

1. Protection against atmospheric and external hazards. Here packages can be designed to give protection against such hazards as moisture, dryness, heat, cold, light, insects, rodents, etc.
2. Protection against "human" hazards—principally counterfeiting, tampering and pilferage.
3. Protection against transport hazards such as shock, breakage, leakage, sifting, grease, scuffing, etc.
4. Protection against the product itself—where the product might react with the package to cause damage to itself—such as loss of flavor, or to cause damage to the package by grease penetration, moisture penetration, etc.

It will be seen that these four broad classifications tend, to a certain degree, to overlap. For instance, moisture is an ever present transport hazard to products such as salt or tea when these are shipped on transoceanic voyages. Heat and cold, likewise, are hazards which occur during transport.

Moisture Resistance

Perhaps the greatest among such hazards, in its destructive effect upon packaged products and upon packages themselves, is the element of moisture and its counterpart, dryness. Certain products must be protected against atmospheric moisture which, if permitted to seep through the walls of the package, would adversely affect the usability of the product or its appearance. Thus such hygroscopic materials as salt become caked when damp and can be used only with difficulty.

In other instances, the moisture content of the product must be held to a relatively constant level. Here the moisture-proofing function of the package is a two-way function. It must retain such moisture as is present in the product at the time of packaging and must prevent the entrance of additional moisture with resulting deteriorating effect. An instance of this sort would be in the packaging of pipe tobacco where excessive moisture is only less of a nuisance than excessive dryness.

In still other classifications, the moisture resistant package must possess resistance to only a limited degree. Thus in the packaging of certain breakfast foods, it is found desirable to pack the food in a very dry condition, since this facilitates the filling and weighing operations and prevents clogging of the filling spouts and hoppers. However, in order to bring out the finest flavor of the product, it is desirable, prior to consumption, to pick up a certain limited quantity of moisture. For a package of this sort, true moisture-proofness would be disastrous. What is actually desired and attained is a control of moisture passage through the walls of the container, within certain desired limits, so that the product tends to reach the consumer under ideal conditions.

Methods of Moisture-Proofing

Vast volumes of data have been published regarding moisture-proofing and on the counter-claims of various moisture resistant packaging materials. Suffice it to say that there are two general means of achieving moisture resistance in a sheet type of packaging material. One involves the use of a material itself impervious to moisture—at least to the degree required by the demands of the product to be packed—and hence incapable of passing moisture-vapor through its walls. One instance of this sort would, of course, be a metal foil or a rubber derivative sheeting and it is this characteristic of such materials which led to their early use wherever moisture retention or moisture exclusion was desired.

The second general type of sheet is one which, by impregnation or by coating, can be made to acquire qualities of resistance to moisture passage. Such sheets would include "moisture-proofed" transparent cellulose, parchment papers, glassines and waxed papers. In all probability, there is no absolute line of demarcation between the two groups. Thus certain rubber derivative sheets

Cross References: Procedure in Design, page 6; Design Testing Techniques, page 9; Merchandising Considerations, page 11; Production Considerations, page 13; Boxboards: Types and Selection, page 32; Specially Processed Cartons, page 68; Decorative Materials—General Considerations, page 156; Protective Foils, page 180; Waxed Papers: Types and Uses, page 181; Protective Glassine Papers, page 184; Vegetable Parchments: Types and Uses, page 185; Transparent Wrapping Sheeting, page 188; Laminating and Combining, page 193; Tarnish Resistant Papers, page 197; Package Sealing Tapes, page 198; Shredded Paper and Cellulose, page 200; Resin Treated Papers, page 201; Paper Bags: Types and Uses, page 204; Wrapping Equipment, page 426; Tight-Wrapping Equipment, page 434; Types and Functions of Adhesives, page 474; Protective Paddings and Cushions, page 540.

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are probably in a border line position insofar as they provide an extremely high resistance to moisture-vapor passage without requiring external coatings.

Such coatings may consist of wax applied to one or both outside surfaces of the sheet or may consist of wax, asphalt or other similar materials laminated between two sheets to form a single moisture resistant wall. In certain types of paper, moisture resistance is achieved by impregnation or wax or other materials. In still other instances, a coating of a synthetic resin lacquer is utilized. In still other instances, varnishes are used. In the latter two cases, application may be made during the process of making the sheet or at a later point in the package producing process.

The problem of moisture-proofing does not end, however, with a choice of a sheet material from which the bag, wrap or carton is to be made. The matter of achieving moisture-proof seams or joints presents a separate problem which is, nonetheless, very definitely related back to the problem of selecting a moisture-proof sheet. In part, the problem may be solved by careful design of the package to secure sufficient overlap at joints and to protect the corners against the formation of even minute holes which will, of course, destroy all moisture resistance. In part—in the case of heat-sealed sheets—the problem is still a matter of proper design and proper production of the package, for it is not enough to take a material that is capable of being heat-sealed. Folds and seams must be so designed that heat-sealing will cause a bond with an imperviousness to moisture equal to that of the wrapping material itself and one which is not likely to be broken or fractured during any of the subsequent experiences of the package.

Space does not permit, nor needs demand, an equally detailed study of all the other forms of atmospheric and external hazards which packaging materials can supply. The individual articles on each material describe in some detail the protection the materials afford against heat or cold, against light, infestation and mold resistance, odor contamination, lint contamination, etc.

Protection Against Human Hazards

Turning to the question of protection against human hazards, we find a number of materials available which tend to resist the consumer's or dealer's attempts to tamper with the package without authorization. Counterfeit-proof boards and papers are available. But even where these are not utilized, the packaging material may be used in such a way as to provide a sealed container which will disclose any attempt at tampering and thus will make such tampering, prior to final sale, and actual impossibility.

In the field of protection against the hazards of transportation, the materials under consideration in the following articles do not play a major part. With the exception of shredded papers and cellulose, tissues and tarnish resistant papers, all of which are used on occasion as cushions for the protection of portions of a merchandise unit or for the protection of the unit itself within the shipping container.

Most protective materials, however, are related to the hazards of shipment not so much in the way in which they afford protection against these hazards, as in the way they themselves resist the wear and tear of shipment. Some materials are more resistant to scuffing and abrasion than are others, and hence more desirable if this consideration is a major one in the case at hand. Some materials are non-staining and are, therefore, more suited for use where protection and leakage in transportation is to be anticipated and where the leakage of a single unit might destroy or mar the labels or wraps contained in an entire caseload.

Certain materials are particularly suited to special categories of merchandise. Thus tarnish resistant papers, which are sulphur-free, are definitely to be specified in the packaging of silver products and other tarnishable metal items. Certain wadding materials are highly moisture-absorptive and hence are particularly suited where leakage is a possibility, as in the case of mailed liquid-holding containers. The list might be indefinitely extended and every packager can, of course, cite instances of this sort from within the scope of his own experience.

While it becomes clear, therefore, that protective materials must be chosen for their ability to afford the particular kinds and degrees of protection required by a given product, certain other factors likewise play a major, if not a governing, part.

Cost vs. Protection

Frequently, the packager finds it necessary to compromise as between the fullest protection at high cost and limited protection at lower cost. Certain materials are inherently higher in cost than others, or require higher expenditures in processing costs, handling, etc., and hence can be utilized only where the margin of profit is such as to justify the fullest possible degree of protection for each of the hazards against which the package may be expected to stand up. More often, however, the packager will find it advisable to select those particular materials which afford a maximum of protection consistent with reasonable cost.

The inherent protective qualities of any of the materials discussed in the following articles are, of course, merely potential qualities. The achievement of full protection is dependent quite as much upon the manner in which the protective materials are utilized as upon the materials themselves. Thus, one may utilize a completely moisture-impervious material as a wrap without securing a moisture-proof package, simply because of leakage at the seams due to poor choice of adhesives, poor construction design or fracture of seam closures in shipment or handling. For this reason, the selection of protective materials must be based upon an individualized estimate of each specific problem. Unless the package structure is such as to assure maintenance of protective qualities at all points up to the time of use—and even after—it is obviously wasteful to utilize expensive and highly protective materials which will be handicapped in the performance of their functions by ineffective package structures.

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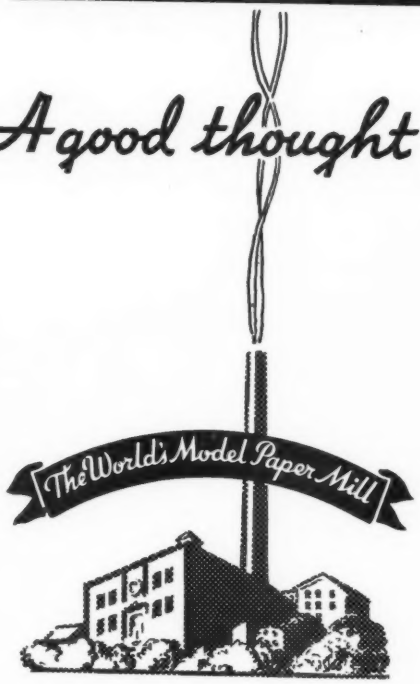

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1. Individual heat-sealed packets protect drugs and other products against air, light, moisture, etc. **2.** Heat-sealed printed foil pouch packet for tobacco, providing protection for the product both before and during use. Photos courtesy Aluminum Co. of America. **3.** A group of printed foil cartons combining both protective and decorative functions. Photo courtesy Reynolds Metals Co., Inc.

Protective Foils

Metal foil is a thinly rolled sheet of metal, such as aluminum or an aluminum alloy. For packaging purposes, it may be used alone or laminated to various grades of paper or fibreboard. When a package of high protective, as well as exceptional display value is needed, metal foil is especially desirable. It is impervious to light, resistant to the passage of water-vapor and air. These attributes, together with its reflection of radiant heat, have long made it popular in wrapping confectionery and food products, tea and coffee, cheese, yeast, cigarettes, etc.

Because metal foils consist of a thin layer of metal, they are opaque to light. Where protection from light or radiation is desired, therefore, metal foils can serve as an efficient barrier. In the thicknesses most frequently used for packaging purposes, foils are, for the most part, comparatively free from pinholes. In the foils of the thinner gauges, however, there will be a few pinholes, but their areas are so small as to have only a negligible influence on light transmission. Chocolate, candy and packaged fruits are examples of products, the quality or appearance of which may be adversely affected by light or radiation and metal foils have been used extensively for packaging products of these types.

Acknowledgment is made to C. C. Conner, Aluminum Co. of America, and Donald G. Dunn, Reynolds Metals Co., Inc., for aid in the preparation of this article.

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The more highly reflective of the metal foils offer an additional packaging feature from the standpoint of protection against heat. In these cases, the metal foil acts as an insulating material by reflecting the visible and infra-red radiation. This is of importance where it is desired to have the package protect against the heat of sunlight. These bright foils are especially efficient in reflecting infra-red radiation, such as that produced by a hot water or steam radiator or a hot stove. For example, aluminum foil will reflect up to 97 per cent of infra-red radiation falling upon its surface.

One of the most important of the protective properties of metal foils is their ability to resist penetration by moisture. Metals such as aluminum are completely impervious to moisture and, in fact, all gases and vapors. The only way gases and vapors can pass through foil is through minute holes or fractures in the material itself. In the majority of cases where such openings exist, they are usually of such small area as to permit only a negligible passage of water-vapor.

Cross References: Folding and Display Cartons, page 35; Specially Processed Cartons, page 68; Set-Up Paper Covered Boxes, page 74; Decorative Foils, page 162; Protective Materials—General Considerations, page 177; Laminating and Combining, page 193; Metal Foil Bags: Types and Uses, page 210; Embossed Seals, page 310; Types and Functions of Adhesives, page 474.

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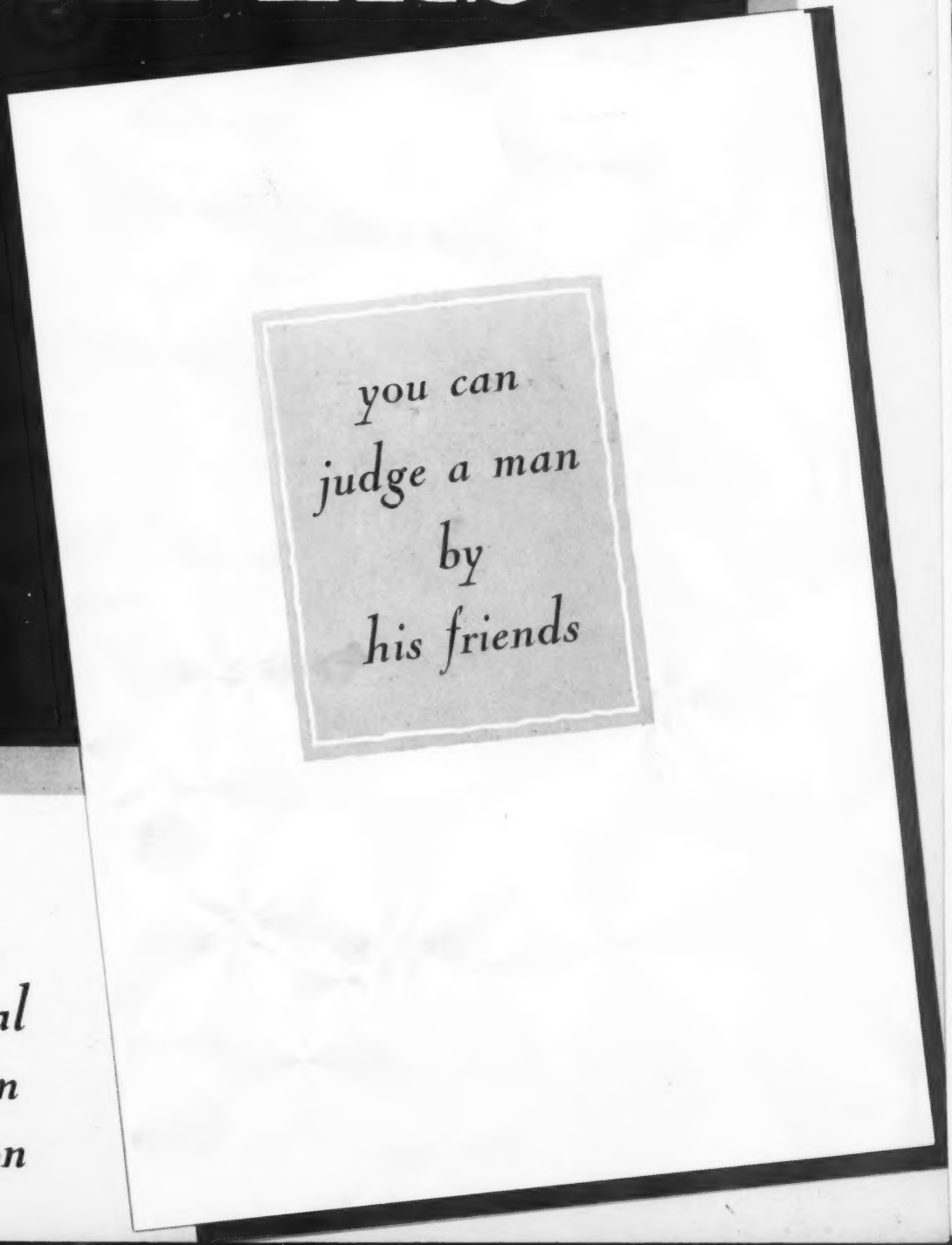

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Obviously, in order to secure the maximum resistance to moisture penetration with metal foils, folds and joints should be tightly sealed. However, there are only certain cases in which such complete protection is required or desired and it is possible to make joints, by lapping and folding, which permit only a small amount of moisture to pass in or out of the package.

One of the most familiar uses of metal foils to minimize moisture changes is in the packaging of cigarettes, cigars and tobacco. Actual tests have measured the moisture-proofing efficiency of metal foils for packaging these products. One such experiment was made by exposing both foil-wrapped and unwrapped cigars to a controlled dry atmosphere for a period of time and determining the moisture loss at regular intervals.*

On the first day the unprotected cigars lost 25 per cent of their original moisture content. After two days they had lost 45 per cent and within five days 60 per cent of their original moisture had been lost. Under the same storage conditions, the foil-wrapped cigars had lost but 3.7 per cent and at the end of a month they still retained nearly 80 per cent of their original moisture.

In cases where packaging to prevent excessive moisture changes is the important consideration, yet it is not desirable or practical to completely seal the foil, other sealed components, such as cellulosic jackets, can be combined in the package as an effective means of minimizing the passage of moisture through the foil seams.

Heat-sealing, one of the newer packaging developments as applied to metal foils, has given these materials still greater capabilities. For use in heat-sealed packages, the foil is laminated or coated with other materials which provide additional strength, flexibility and durability and adapt the material to hermetic heat-sealing operations. This process provides a packet which is completely air-tight and light- and moisture-proof for those materials which may be affected by one or more of these agents. Likewise, lacquer coatings and various types of paper backing are applied to metal foils for a host of packaging uses and these supplementary materials also offer some measure of protectability to the foils.

Uses of metal foil for protective packaging fall mainly under five heads: cartons, bags, envelopes, labels and tight wraps. In carton packaging, the foil is used sometimes as a liner for solid-fibre containers, sometimes as an outer wrap. It may be solid glue laminated to the board, forming an outside surface which may be printed or embossed. Or, for extra protection, it may be laminated to two sides of the board. Cartons made from these laminated boards are used extensively today in packaging tea, spices and other dry powdered or granulated products. They may be heat-sealed for permanent exclusion of light and air and can be provided with pouring spouts.

Metal bags, made by laminating thin sheets of foil to plain bond, glassine, waxed or kraft papers, are becoming increasingly popular in the packaging of coffee, potato chips, peanuts and other products which lose quality through either the loss or absorption of moisture or through the disintegrating effects of light. The same considerations make the "tight wrap" package especially popular for prunes and other semi-dried fruits, for cake mixtures and other hygroscopic items.

Flexible metal heat-sealed envelopes are often used in packaging small portions of powdered products in the food, drug, chemical and many other industries. Great progress has been made in the small unit protective packaging of drink and soup mixes, coffee, tea and high grade chemicals and medicines.

* By Aluminum Research Laboratories, using single sheets of 0.0007-in. aluminum foil, double-fold close. Samples exposed at 25 per cent relative humidity.

Waxed Papers: Types and Uses

Waxed papers are one of the oldest of the protective wrappings, having been first manufactured by hand processes many decades ago. Today the papers are, of course, treated by automatic machinery and manufactured on a mass production basis. Through the control and selection of base paper stock and through accurate control of wax and wax application, manufacturers have been able to develop a wide range of paper types suited to the needs of various industries.

Types of Waxed Paper

In common use, we speak of waxed paper in four classes, although there are many sub-divisions of the four classes. For practical consideration these may be classified as follows:

Dry Waxed Sulphite: Impregnated with paraffin of a relatively low melting point. Carries little or no surface wax and is dry to the touch. Not entirely proof against water-vapor and air. Such a wrapper is a protection against contamination by handling or contact and, to a moderate degree, against changes in moisture content. Is not self-sealing on application of heat. Its use is indicated in many special instances.

Semi-Dry Waxed: Here the wax is driven into the fibres of the sheet and there is also a slight surface coating. Often used in delicatessen, meat and grocery shops and in industries not related to foods.

Wet Waxed Sulphate or Self-Sealing: A heavier coating of paraffin with correspondingly

Cross References: Protective Materials—General Considerations, page 177; Protective Glassine Papers, page 184; Paper Bags: Types and Uses, page 204; Wrapping Equipment, page 426; Tight-Wrapping Equipment, page 434.

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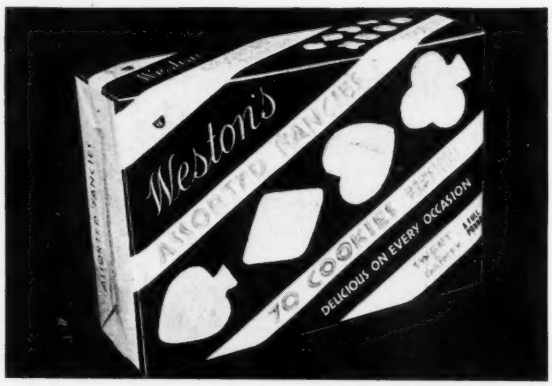

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1. Waxed paper wrappers for frozen foods utilizing a special wax developed to retain high sealing strength in low temperature storage. **2.** Printed waxed paper bread wraps sealed with heat-sealing end labels. Photos courtesy The Menasha Products Co. **3.** Pre-printed waxed paper wrap as used over unprinted carton blank. Photo courtesy Nashua Gummed & Coated Paper Co. **4.** Typical printed waxed wraps as used over blank cartons. Photo courtesy Kalamazoo Vegetable Parchment Co.

greater resistance to the passage of air and of water-vapor. It is self-sealing on application of heat. Used as a wrapper for many products, but especially useful as a liner or divider.

Waxed Glassine: Is lightly and also heavily coated with paraffin, usually of high melting point and like waxed sulphite is odor-proof, insect-proof, etc. Waxed glassine is also made in an endless variety of grades and weights and serves various purposes.

Bread Wrappers

Perhaps the best known of waxed paper uses is found in the baking industry. Here waxed papers find their greatest application as bread wraps. Specially selected base stock and rigidly controlled quantities of wax coating are utilized in preparing these papers to allow the bread to "breathe"—for yeast in bread does not entirely stop acting after the bread is baked. The secondary yeast action results in the giving off of gases and moisture which if confined would hasten the formation of mold and chemical reactions. Thus, the protective functions of waxed paper in bread wraps is to provide limited moisture-proofing protection or, what might be termed, a moisture control.

Frozen Food Wrappings

Waxed papers have come into extensive use in the rapidly growing frozen food industry where special types of waxed paper particularly suited to sub-zero sealing have been developed. The qualities desired under these circumstances include maximum moisture-vapor transmission resistance, flexibility at low temperatures and maximum heat-seal strength. Many paper coatings are compounds of waxes with either synthetic resins or rubbers.

Opaque Waxed Papers

A most important development of recent years has been in the manufacture of opaque waxed papers. Frequently these papers are coated with colored pigments and then waxed, achieving a purity of hue and high brightness and offering a contrast to printed matter on the wrap.

Researches by companies in the industry indicate that opaque waxed papers are effective in retarding harmful changes in many products accruing from the effect of light rays. In other words, opaque waxed paper is penetrated to a lesser extent by light rays than ordinary waxed paper or a white transparent paper.

Another change of recent years, producing marked economies for carton packagers, revolves around the printing of waxed paper wrappers. Formerly, printed cartons were common, being filled, wrapped in waxed paper and heat-sealed. Today in many plants, plain unprinted cartons are used. The waxed paper is printed in a continuous roll and a hard, glossy coat of wax applied to the printed side. Through the use of an accurately registering electric eye, these waxed printed wraps are automatically cut from the roll, fed over a glue roll which applies a thin coat of adhesive to the unwaxed surface, and wrapped over the unprinted carton blank.

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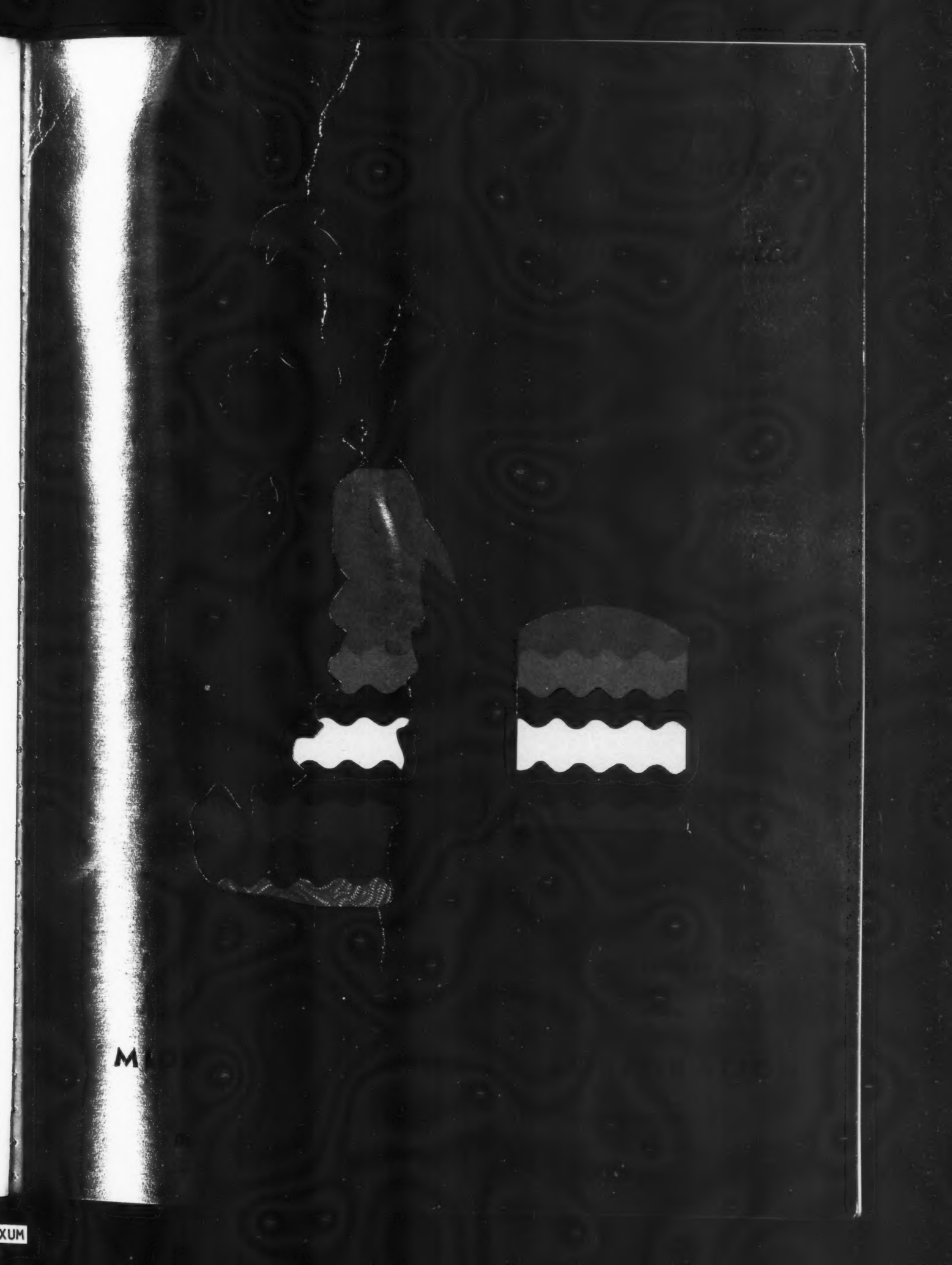

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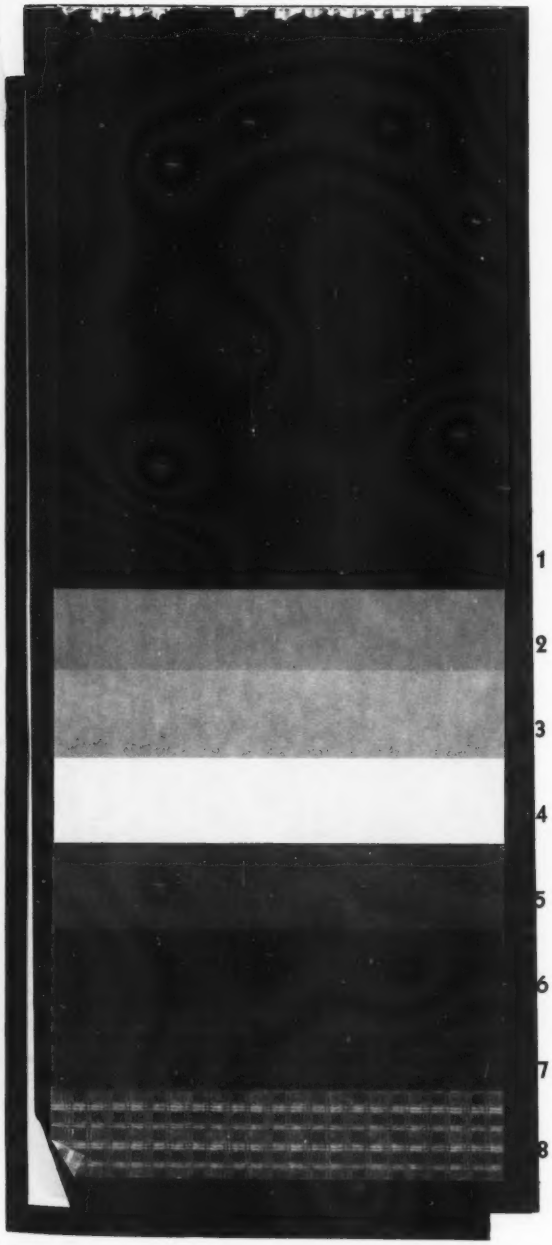

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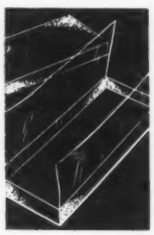

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Protective Glassine Papers

Certain wood fibres can be refined beyond the fineness usually given paper fibres and the process can be so handled that these fibres will have excess water driven into their structure, i.e., they become "hydrated." Papers formed from hydrated fibres have a dense, closely knitted structure with a minimum of porosity. Because water and grease are repellent, the impregnant water in the fibres of such papers makes them highly grease-resistant and they are known as "grease-proof" papers.

Acknowledgment is made to F. S. Leinbach of the Riegel Paper Corp. for aid in the preparation of this article.

1. Opaque white glassine laminated to provide highly moisture-proof inner package liner. **2.** Transparent printed glassine used as overwrap on foil wrapped chocolates. Photos courtesy Riegel Paper Corp. **3**. Lacquer-coated glassine bags, heat-sealing and highly moisture-vapor-proof. Photo courtesy The Menasha Products Co.

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The grease-proofness of paper generally is measured by the number of seconds a sheet can withstand penetration by turpentine—the first spot of failure ending the test. Adequate grease-proofness for general usage is had in a paper that will show a turpentine penetration test of 1,800 seconds. The general type of paper can be made to meet lesser standards and sometimes for economic reasons is so made for specific jobs of less vigorous requirements. Generally speaking, however, the term "grease-proof" applies to papers meeting the 1,800-second standard.

When the hydrated type of paper is subject to the extreme pressure exerted by "supercalenders" developed for the purpose, the paper becomes further compacted, its surface becomes smooth, its grease-proofness is enhanced and it may become quite transparent. The paper is then known as "glassine."

The dense, hydrated, nearly continuous cellulosic structure of glassines enables them to resist transmission of certain vapors, such as those of hydrocarbons and the vapors characteristic of many flavors and aromas, a quality important in flavor and aroma retention.

For softness and mechanical operability, glassines can be made pliable by the addition of hygroscopic "plasticizing" materials. Whether it shows any effect on the actual tearing or bursting strength of the paper or not, such pliancy leads to operational and package durability. Therefore glassine users are prone to think of "plastic" sheets as stronger sheets.

The smooth non-porous surface of glassine especially adapts it to subsequent treatment. For this reason, much glassine production is further converted before ultimate fabrication. Glassine may be embossed for decorative reasons. It may be waxed to secure moisture-vapor-proofness, increased transparency and gloss and a certain measure of heat-sealing qualities. It may be laminated to secure a sheet that can be more transparent, softer and stronger than a single sheet of equivalent weight and the laminating agent can be compounded to lend the lamination moisture-vapor-proofness. It may be lacquered to produce its maximum transparency and gloss, to give it moisture-vapor-proofness, water repellency and positive heat-sealing qualities. Lacquer coating also can enhance the original properties of grease-proofness, vapor-proofness, etc. Incidentally, untreated glassine has little, if any, moisture-vapor-proofness.

Cross References: Specially Processed Cartons, page 68; Decorative Glassine Papers, page 164; Bags: Special Types, page 228; Wrapping Equipment, page 426; Tight-Wrapping Equipment, page 434; Types and Functions of Adhesives, page 474.

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PYROXYLIN PAPERS

SEALING TAPE

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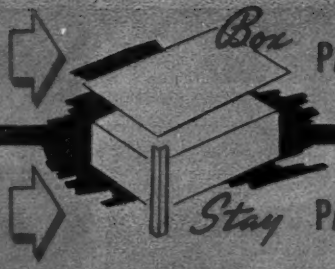


Box PAPERS

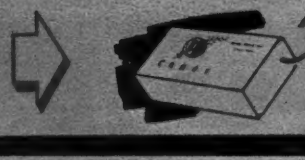
McLaurin-Jones Box Paper line includes such varied items as Crystal Box and Lightning Flash Enamel, Super Colors and Warelac . . . all in a rainbow group of colors, plain or embossed. Of course McLaurin-Jones Plated, Pyroxylin and Casein Metallic Coated Papers also are available in a wide range of designs, colors and embossings.

Stay PAPERS

Setup box makers prefer McLaurin-Jones "Ideal" Stay because it gives maximum results with minimum waste. Its ability to grip edges firmly is well known and its possibilities for faster production save time and money for its users.

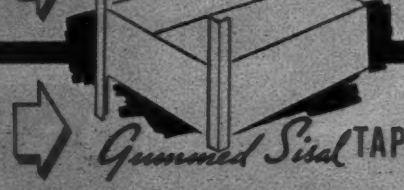
Flat Gummed Label PAPERS

McLaurin-Jones Guaranteed Flat Gummed Label and Seal papers include white and colored papers in a variety of weights and gummings suited for sticking to any type of surface. It includes a complete line of gummed metallic coated papers, gummed foil and gummed glassine . . . in fact any gummed paper that can be used for labels and seals.



Foils

McLaurin-Jones' Ware Foils are made particularly to serve for printed and embossed labels and seals, announcements, window display trims, box wraps, box tops, French fold programs and presentations, announcements, menus, wine lists, etc. Gold, copper, silver and colored foils are all available for packaging purposes.



Gummed Cambric

McLaurin-Jones Cambrics give box corners the strength of reinforced concrete. By constant working with box makers and shippers, and keeping in close touch with their problems, we have succeeded in providing thoroughly practical types for every purpose.

Gummed Sisal TAPE

McLaurin-Jones creped Sisaltape grips the manufacturers' joint of corrugated cartons with a permanent bulldog grip that only McLaurin-Jones gumming gives. You can rely on your cartons when the manufacturer's joint is sealed with McLaurin-Jones Creped Sisaltape.

Brush Enamel PAPERS

McLaurin-Jones Brush Enamel fills every need of lithographers, label producers, box manufacturers and printers who seek outstanding results.

Casein Metallic Coated PAPERS

McLaurin-Jones casein metallic coated papers are made in weights suitable for box and package maker, label and seal manufacturer, and the printer of direct mail and specialty advertising. Their excellent printing surface, even coating and lustre, are widely acclaimed. They are available gummed or ungummed in several weights.

Plated PAPERS

Eleven soft colors plus pure black and white make up a range suited to every taste. Excellent for box covering and label usage, either gummed or ungummed.

Pyroxylin PAPERS

McLaurin-Jones Pyroxylin Coated Papers in gold and platinum are recognized by multitudes of printers, label and tag manufacturers, and box manufacturers, for their rub and tarnish resistant surfaces . . . for their ability to take the most intricate printing . . . for their waterproof surface.

Sealing TAPE

McLaurin-Jones "Planet", "Comet" and "Sunrise" Blue Star Sealing Tapes are well known and widely used by shippers the country over. All are known for their strength, outstanding adhesive qualities and their ability to stand the hardest abuse in transit. They can also be had printed.

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Grease-proof glassine and all of the modified or treated glassines can be printed by several methods, further increasing their usefulness.

In each type of paper there are many modifications available. There are different weights, of course, and, in this field, basis weight is measured as the weight of 500, 24-in. by 36-in., sheets. There are variations in the degree of hydration available. For strength and economy, there are the unbleached or lightly bleached kraft types. There are also the pigmented, opaque whites, the clear transparent types and the colored transparencies. Every mill has standard colors which it stocks or runs from time to time so that smaller-sized lots are available. As with other papers, because of the high production rate of paper machines, special colors and grades must be made in minimum lots of several tons, usually five.

Waxed glassines are highly moisture-vapor-proof and, because they are grease-proof, they neither absorb nor transmit grease. For these reasons, they have been widely adopted by the cracker and biscuit industry where, as liners in economical cartons, they keep the product fresh and crisp longer, eliminate grease stains on cartons and minimize rancidity problems which are accelerated by the rapid deterioration of grease that might penetrate a lesser liner and reach the carton.

The moisture-vapor-proofness of waxed glassines alone has made them invaluable to the cereal manufacturer, for through their use, he can extend his package's shelf life and, if the package is properly designed, it will be possible to reclose it by folding the liner over partially withdrawn contents.

Candy manufacturers turn to glassine for appearance as well as grease-proofness, finding in its adaptability many opportunities to create novel and attractive effects while retaining the basic functional qualities necessary in the first place.

The baking industry has long found a solution to many of its problems by using glassine and its derivatives. Small cakes are marketed in printed waxed glassine, pies in uncoated, though printed, glassine.

A striking example of the ability of the glassine manufacturer to produce "tailor-made" papers for specific uses is found in the economical and attractive printed and lacquered glassines for bread packaging. These papers were specifically developed to combine strength, good mechanical and operating qualities and excellent protective (flavor as well as moisture) qualities with transparency, gloss, brilliant and attractive coloring and the opportunity for good design in package appearance.

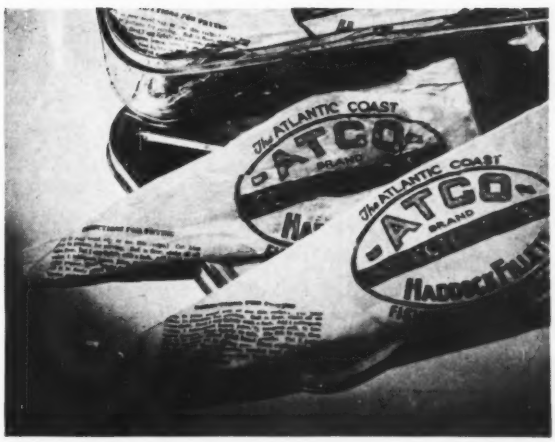
In the food industry in general, there are applications for glassine too numerous to mention; those listed above are only a few. There are the carton stocks made grease-proof by lamination with any of the many glassine types. Glassine bags, carton liners, bag liners, wrappers, envelopes and interleavings are also widely used. Surgical products are packaged in glassine and then sterilized, the glassine being chosen because its lack of porosity enables formation of an hermetically sealed package and because of its appearance and printability. Soap manufacturers find, in glassine derivatives, a combination of protective qualities for retaining moisture and aroma, physical qualities enabling good operation and heat-sealed closures and sales-appealing qualities of attractive appearance and transparency.

Vegetable Parchments: Types and Uses

Vegetable parchment is so called because of its resemblance to animal parchment prepared from the skins of goats, sheep, etc. It is, however, a processed paper made from unsized sheets prepared from rag or pure chemical wood pulp. The paper web is converted into "parchment" by passage through a bath of sulphuric acid, after which it is thoroughly washed and dried. The sulphuric acid treatment causes it to resist disintegration by water or salt solutions, either hot or cold, and it is highly resistant to many other solutions.

Vegetable parchment is odorless and tasteless. It is either grease-proof or grease-resistant. It has a high wet strength which is substantially maintained over a long period of time. The sheet is frequently softened by the use of plasticizers. It is available in waxed, coated, embossed and crinkled forms and in a range of basis weights of from 30 to 60 lbs.

Special inks are used in the printing of genuine vege-



1. Printed parchment wraps for fish fillets. Photo courtesy Paterson Parchment Paper Co.

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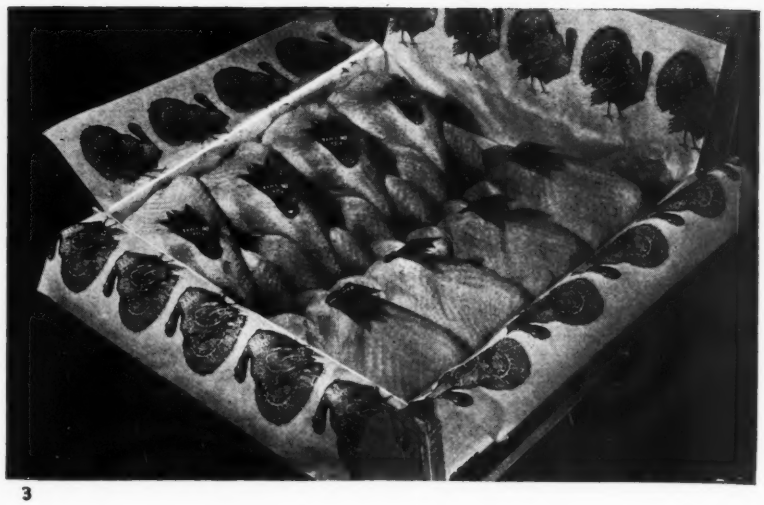

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2. Cheese bricks wrapped in vegetable parchment. Photo courtesy Kalamazoo Vegetable Parchment Co. **3.** Box liners of printed parchment—insoluble and grease-proof. Photo courtesy Paterson Parchment Paper Co. **4.** Parchment wrappers. Courtesy Kalamazoo Vegetable Parchment Co.

table parchment, since the printing must not offset when used on greasy, wet or briny foods. The inks must stand the boiling test, for if you will refer back to the dairy industry, you will find that most of the dairies boil their butter wrappers and liners before they use them. The majority of the wrappers are printed. Printed wrappers are probably one of the best mediums of advertising, for the carton of butter, with its printed wrapper enclosing the print, goes right to the home and is looked at many times daily by the one who does most of the buying.

Among the many uses of vegetable parchment, the following are outstanding:

In the meat packing industry, where protective wrappings that will not disintegrate on contact with meat juices and where grease-resistance and attractive color are required, snow-white vegetable parchment has been widely adopted. Crinkled vegetable parchment—i.e., a sheet which has been creped or crinkled to increase its strength—is used in packing houses as a liner for boiled ham retainers and for other purposes. Poultry packers utilize vegetable parchment—frequently in printed form—as a liner for crates which, when turned back over the box edge, forms an attractive display.

In the dairy industry, vegetable parchment is widely used for the wrapping of butter because of its freedom from tastes and odors, its high wet strength and its grease-proofness while wet. Many types of cheese are also wrapped in parchment as are ice cream bricks. In the case of the latter product, parchment offers the advantage of stripping clean from the ice cream, leaving no paper shreds.

In the fishing industry, parchment is widely used as wrappers for fresh, frozen and smoked fish. For frozen fillets of fish, it is customary to use parchment waxed on one or both sides because of the greater insulating value and because the waxed surfaces prevent the paper from sticking to the frozen fish.

Lard and shortening manufacturers use the material extensively for lining tubs and as an inner wrap for 1-, 2-, 4- and 8-lb. cartons. The material's fat- and oil-resistant qualities prevent grease penetration and staining of the outer container.

In the frosted foods industry, vegetable parchments, both plain and coated with paraffin, are used for fish fillets, fruits and vegetables, particularly for liquid or semi-liquid packs in which case the paper is first fabricated into a bag, which is inserted into a carton and filled. The top is then folded over and the seam or fold heat-sealed.

In the metal fabricating trades, manufacturers have adopted vegetable parchment as a wrapper for small metal objects to prevent the oil into which these objects have been dipped as a rust preventative from staining outer cartons and packages.

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Transparent Wrapping Sheeting

While all of us can recall seeing thin gelatine sheeting on packages as far back as we can remember, it was only until a year or so before the first World War that we saw a completely transparent form of cellulose sheeting. The nature of the demand for transparent wrapping fairly parallels that of the glass container in accordance with such phrases as "See what you are buying." However, it offers decorative possibilities not within the scope of the glass container. Its adaptability, due to its extremely flexible nature, makes this possible. Further, it may be colored, embossed, printed upon and satisfactorily and quickly bonded together.

Cellulose and Cellulose Derivatives

The first type of transparent cellulose sheeting which met with ready acceptance as a general wrapping was composed of viscose or regenerated cellulose. This material is completely transparent and colorless, is slightly hygroscopic, non-inflammable (but burns) and is the lowest-priced completely transparent sheeting obtainable on today's market. It is affected, to a degree, by differences in atmospheric conditions, more particularly humidity changes. It can be obtained in colors and embossed designs. This non-moisture-proof form is not used as a food wrapping in direct contact with food products possessing a high moisture content. Its most extensive application is that of an outer wrapping for nearly every type of commodity of such size as can be readily enclosed within its standard size of sheet dimensions and the price and profit margin of the article permitting its use. Its relatively low price, together with its ease of sealing and workability on automatic equipment, has extended its use to almost limitless fields.

A relatively new type of sheeting which has recently found its place on the American market as a general wrapping is that which is composed of cellulose acetate. It possesses an unusually high degree of clarity, brilliancy and surface sheen. It is practically unaffected by atmospheric conditions and humidity changes. It can be obtained in colors, is readily printed upon and embossed, as well as quickly cemented. Its properties can be so varied that the same material can be made into sheeting which has striking rigidity or can be prepared so that it possesses the flexibility of rubber sheeting. In addition, these conditions can be closely maintained through wide humidity and temperature changes. Its moisture transmission values can be controlled within definite limits, so that it may be readily applied to almost any type of wrapping, including direct contact with food products which it encloses. As it is not affected by humidity changes, it is effectively used as a covering for the windows of envelopes, window cartons and display containers.

A new form of sheeting which has recently become available is made of ethyl cellulose, an ether of cellulose and ethyl alcohol. It is stable to alkalies, heat and light. Its high flexibility is inherent in the material and is not obtained through the use of any added substance. It is a tough, clear, glossy sheet which transmits up to 95 per cent of visible as well as ultra violet light. It remains strong and flexible and does not shrink or curl on aging or on exposure to light and over wide variations in temperature and humidity. It is readily printed upon or embossed and easily cemented. Some types are moisture-proof and heat-sealing. The standard material has good resistance to attack by greases and vegetable oils and special types are available which are entirely unaffected by naphthas and mineral oils. Ethyl cellulose sheeting is an excellent material for window packages and display containers and can be used in direct contact with foodstuffs. Although it will undoubtedly find its place as a general purpose wrapping material, its combination of properties indicate its more immediate application to uses at present not satisfactorily filled by other sheetings.

In order to overcome some of the shortcomings of the viscose or regenerated cellulose sheeting, more particularly to render it moisture-proof or moisture-impermeable, this type of cellulose sheeting is coated with a thin film formed from a nitrocellulose lacquer containing resins, plasticizers and waxes. The resulting sheet is essentially moisture-, oil- and grease-proof, of greater strength and increased inflammability. While it is not completely water-proof, it is highly resistant to the transmission or penetration of moisture which should be the interpretation of the term "moisture-proof" as used in this article. This treatment reduces its sensitiveness to humidity changes and increases its resistance to the attack of insects and the growth of mold.

Because of the moisture penetration resistance offered by this coating, this type of sheeting is invariably used where the wrapping must come into direct contact with the food products and especially when it is desired that the original moisture content in that food or similar commodity be retained for a fairly long time. This applies particularly to such materials as confections, baked foods and tobacco products, whose moisture content must not be lost; while crackers, candies and related materials must not take up moisture. Even though this type of sheeting costs nearly one-third more than the uncoated sheet, the volume used of this coated sheeting is about three times that of the uncoated sheet. Obviously, its resistance to moisture, as well as its ability

We are indebted to Harold A. Levey, Consulting Chemist and Industrial Engineer, for the preparation of this article.

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See reverse for pictures of various Nashua products. This insert is printed on Nashua No. 9165 Copper.

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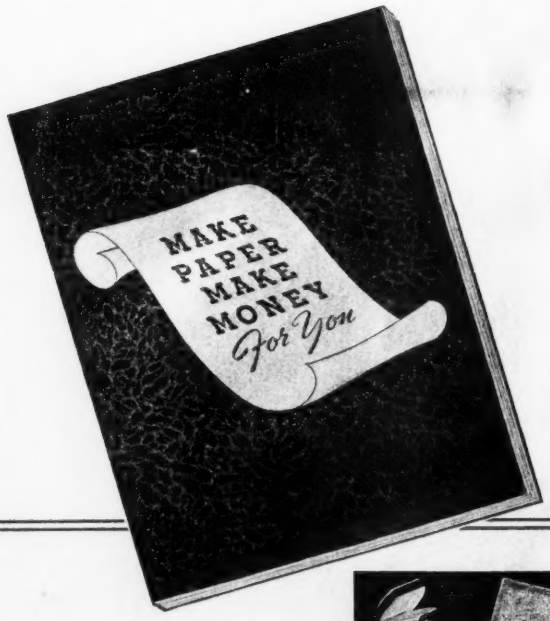

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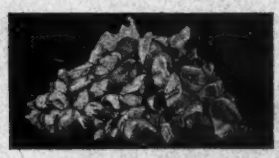

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TYPES, SOURCES AND PROPERTIES OF TRANSPARENT WRAPPING SHEETING

Types	Manufacturers	Trade Names	Grease & Oil Proof	Moisture-Vapor-Proof	Water-Proof	Mold & Vermin-Proof	Heat Sealing	Dimensional Changes with Humidity Differences	Dilute Acid Resistance	Brine Resistance	Rancidity Inhibitive
1 Regenerated Cellulose	E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.	du Pont Cellophane	Yes	No	No	No	No (Some types are)	Yes	Poor	Poor	No (Some types are by formulation)
	Sylvania Industrial Corp., New York City	Sylvania Cellophane									
2 Coated Regenerated Cellulose	E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.	Moisture Proof Cellophane	Yes	Yes (Processed)	No	Yes (Partially)	No (Some types are)	Yes	Poor	Poor	No (Some types are by formulation)
	Sylvania Industrial Corp., New York City	Moisture Proof Cellophane									
3 Cellulose Acetate	American Products Mfg. Co., New Orleans, La.	Inceloid A Inceloid M.T.R.	Yes	No (Those processed are)	Yes	Yes	No (Some types are)	No	Good	Good	No
	Celluloid Corp., New York, N. Y.	Lumarith Protectoid									
	Eastman Kodak Co., Rochester, N. Y.	Kodapak									
	Transolene Co., Barrington, Ill.	Transowrap									
4 Ethyl Cellulose	American Products Mfg. Co., New Orleans, La.	Inceloid E	No	Yes (By formulation)	Yes	Yes	Yes	No	Good	Good	No
	The Dow Chemical Co., Midland, Mich.	Ethofoil									
5 Rubber & Its Derivatives	Dewey & Almy Chemical Co., Cambridge, Mass.	Cry-O-Vac	Yes (Some types are not)	Yes (Inherent)	Yes	Yes	Yes (Some types are not)	No	Good	Good	No
	The Goodyear Tire & Rubber Co., Inc., Akron, Ohio	Pliofilm									
	Marathon Paper Mills, Rothschild, Wis.	Parafilm									
	Marbon Corp., Chicago, Ill.	Marbofilm									
6 Casein	American Foundry & Machine Corp., Brooklyn, N. Y.	Inda	Yes	No	No	No	No	Yes	Poor	Poor	No
	Kraft-Phenix Cheese Corp., Chicago, Ill.	.....									
7 Coated Casein	Kraft-Phenix Cheese Corp., Chicago, Ill.	.....	Yes	No	No	No	No	Yes	Poor	Poor	No
8 Gelatine	Central Import Corp., Chicago, Ill.	Transpara	Yes	No	No	No	No	Yes	Poor	Poor	No
9 Resins	Bakelite Corp., New York, N. Y.	Polystyrene	Yes	No	Yes	Yes	Yes	No	Good	Good	No
	Union Carbide & Carbon Corp., New York, N. Y.	Vinylite									
	Gordon-Lacey Chemical Products, New York, N. Y.	Vinyl Sheeting									
	Goodrich Tire & Rubber Co., Akron, Ohio	Koroseal									
10 Resin-Treated Papers	Riegel Paper Corp., New York, N. Y.	Diaphane	Yes	No (Partially)	Yes	Yes	Yes	No	Poor	Poor	No
	Transpara, Inc., Rhinelander, Wis.	Maralux									
11 Coated Starch	American Products Mfg. Co., New Orleans, La.	Amyloid	Yes	No	No	No	No	Yes	Poor	Poor	No
12 Coated Carbohydrate Gums	American Products Mfg. Co., New Orleans, La.	Carbofilm	Yes	No	No	No	No	Yes	Poor	Poor	No

to maintain the moisture content of wrapped materials in almost the same state as when they left the manufacturer, appears to more than offset any increased cost that must be incurred.

All of the above types of sheeting are practically odorless and tasteless and can be formed into an almost gastight enclosure. Certain of these types possess sufficient thermoplastic properties to make a satisfactory "heat seal" to bond sheet to sheet by the application of a moderate amount of heat and pressure. These composite forms of sheeting make a wrapping which will retain nearly all of the original odor and flavor of the materials contained therein.

A new development in transparent sheeting has recently appeared on this market which possesses the property of filtering out the ultra violet rays or active elements of daylight. These rays are largely responsible for the spoilage of many forms of food products and cosmetics which prematurely become rancid or lose their odor, flavor or color when exposed to natural light. This form of sheeting is clear and transparent and is obtainable in the standard form of viscose sheeting, as well as the coated or moisture-proof product. Where a greater degree of opacity to these detrimental light rays is desired, all types of sheeting are available in an amber shade, which filters on the ultra violet and will preserve such wrapped products for a longer period than the above described colorless sheeting.

Resin Treated Papers

Papers have not yet been prepared in modified or treated form which have resulted in a sheet that could be considered completely transparent; that is, a transparency comparable with that of water or glass or which, when held up to the light, would not diffuse the light source. As a result, these types of papers appear in varying degrees of translucency. Properties and uses of the various types of wet and dry waxed paper, glassines, waxed glassines, vegetable parchments and the like are, of course, already well known to the packaging industry. There are, however, types of resin treated papers which have an unusually high degree of translucency approaching transparency. They have good moisture transmission resistance and are practically oil- and grease-proof for the limited period of time for which they are used as a food wrapping. Like all treated papers, as well as all the other sheeting mentioned in this article, these last-named products are air-tight and dust-tight. They are immune from attacks by insects and mold growths. Their inflammability is slightly greater than that of the untreated paper.

Resin Sheeting

There is now available sheeting made wholly from resins. The polyvinyl ester resins are largely used and possess many of the desirable properties of the cellulosic types. These types are especially valuable for their heat-sealing characteristics and for lamination over paper and fabrics. In addition to the vinyl ester resins, polystyrene is also being made into thin sheeting, while the acrylic ester resins, as well as the vinyl acetates, are beginning to make an entry into this field. The basic cost of these products and the engineering problems involved in their fabrication into sheeting have retarded their entrance into this field of application. Another modified vinyl sheeting, developed by Goodrich Tire & Rubber Co., has established its place in this field.

Rubber Derivative Sheeting

An innovation in transparent sheeting has recently made its appearance. It is not composed of a cellulosic material, but is made from a rubber derivative known as rubber hydrochloride. Another variety is made from rubber chloride. Still another manufacturer uses this sheet rubber in bags or preformed packages placed around dressed meats, poultry, etc., under conditions of inner and outer pressure difference. These new forms of completely transparent sheeting are highly moisture transmission resistant. They are slightly plastic, but not elastic. Their characteristic difference from the cellulosic type of transparent sheeting is that while their initial resistance to tear is less than the cellulosic type, they offer greater resistance to a tear once started.

Another variety of sheeting is an exceedingly plastic film composed of rubber and wax which can be permanently stretched to several times its original dimensions. While this film is translucent, it has several properties in common with the above types. It is known as Parafilm.

Modern trends have been decidedly in the direction of the completely transparent wrapping and of these there is a preponderance of favor toward the moisture-proofed types, notwithstanding their substantial increase in cost. These situations indicate clearly that the desideratum is to make the wrapped object completely visible, as well as to reach the consumer in practically the same condition as when it left the manufacturer. Such conditions demand a form of sheeting which shall itself be invisible and at the same time possess a high order of protective value. It must include such properties as water-, oil- and grease-proofness and dust- and air-proofness, a high resistance to moisture transmission, good tensile strength and flexure value, together with a retention of these properties over a substantial period of time. It must be available in colors, capable of being readily printed upon and embossed, easily and quickly cemented, as well as being readily adapted for packaging machine (automatic or semi-automatic) operation.

While the moisture-proof viscose sheetings have, in general, most of these desirable properties, they have, however, many shortcomings. They are a laminated composite sheet, the surface coating which renders them moisture-proof having a thickness of only one ten thousandth inch. While moisture transmission resistant, these sheetings are not water-proof. On immersion, or sufficiently long contact with water, the thin protective coating will become detached, thus becoming ineffective for the purpose desired.

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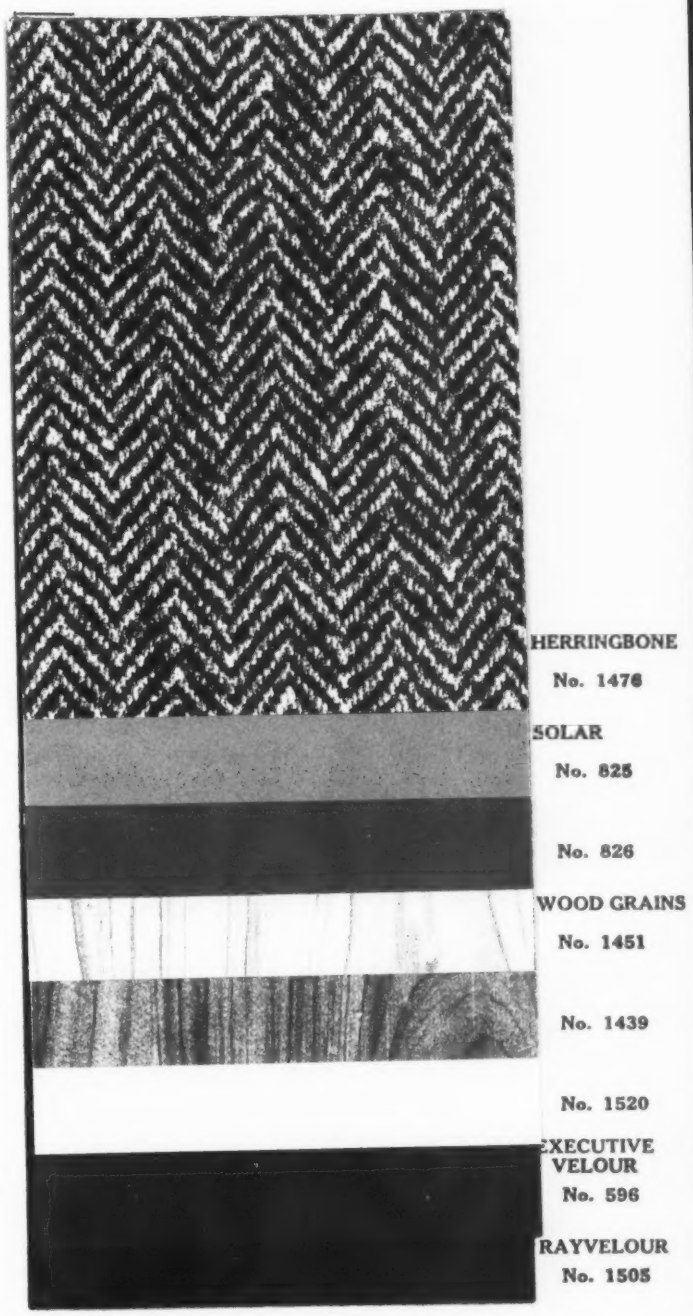

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This insert is Potomac Cover, Light Gray, Antique Finish, sub. 20 x 26—65 lb. (130 M)

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Corrodek offers you a choice of glassine, grease-proof, parchment, bond, metallic, printed novelty corrugated papers, flexible corrugateds, and other specialty papers. The color swatch at the right suggests the range of colors—shows a few samples of the many types of papers. And shown below are typical uses of Corrodek that suggest its possibilities for smarter, safer packages.

Look into the opportunities for restyling your packages with Corrodek, the packaging leader that gives safer cushioning, smarter packages, greater sales. Send today for samples. Or better still, submit your problem to Sherman Packaging Engineers for recommendations. This involves no cost and no obligation, of course. Write Department M-2.

SHERMAN PAPER PRODUCTS CORPORATION
NEWTON UPPER FALLS, MASSACHUSETTS

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Relief effects are now obtained by embossing and printing which in many cases have eliminated at least one wrapping and resulted in a package of more attractive design and greater utility. Owing to the complete transparency of this sheeting, only the printing is visible and appears to be a part of the object wrapped.

Gummed transparent sheeting is now available, both clear and in colors. It can also be supplied printed upon and embossed. Printed and cut-to-shape seals and closures are now fabricated which effectively serve the purpose of sealing and labeling or marking such packages. It also designates the strategic point at which the wrapping might be most readily opened. The clear and colored transparent gummed tape is used in many manually wrapped packages as a time-saver and results in a more striking wrapping. The clear, colorless, transparent, gummed tape is by far the best product for making an invisible repair on torn paper, fabric or other materials.

As transparent sheeting possesses unusual strength for its thickness, the sealing of packages so wrapped and sealed can be opened only with difficulty. To overcome this situation, some manufacturers leave a part of one flap turned up at the closure. Others enclose a small strip or narrow ribbon of a thicker variety of the sheeting, in another color, which projects out at the joint in the wrapping.

As binding tape, transparent cellulose sheeting finds use when folded into a tube with lapped joint and then pressed flat. It may be obtained clear or in colors, as well as with an inserted core of other materials such as metallic foils and paper or fabric that may contain printed matter which shows through the transparency.

Storage of Transparent Sheeting

Cellophane sheeting materials are supplied by their manufacturers with a predetermined moisture content. They are capable of absorbing moisture. They are capable of drying out. Therefore, they should not be stored or handled under extreme conditions of heat, cold, moisture or dryness. The optimum temperature for storage is 70 deg. F. A 50 per cent relative humidity is most desirable.

Purchasers of converted sheets, bags and other forms of cellophane have, on occasion, experienced difficulties with shipments received during or immediately after extreme cold spells. Such shipments, having been subjected to transit during sub-freezing weather, should be allowed at least 24 to 48 hours to reach room temperature before being used.

Unconverted sheet or roll stock is usually securely packed to be in prime condition for the maximum length of time. Original packages should not be opened until ready for use. When entire packages or rolls are not to be consumed immediately after opening, the unused portion of the packages should be rewrapped in their original wrappers for overnight or longer storage.

Rolls should be stored in their original shipping containers until ready for use. Most manufacturers recommend hanging the rolls horizontally. Sheets should be stacked, but such stacks should never be too high. One manufacturer recommends ten packages of 1000 sheets each as maximum stack height and advises smaller stacks in humid weather. Adherence to this particular specification will prevent sheets from adhering to each other.

The moisture-proof types of cellophane are not as readily affected by climatic changes as are non-moisture-proof varieties. Nevertheless, the precautions described above apply to moisture-proof varieties though, perhaps, to a lesser degree. One supplier recommends against the purchase and storage of more than a 60-day supply of material, since fresh stock can be obtained promptly when desired.

Acetate sheetings, supplied in rolls, should be stored hung horizontally in suitable wraps at a room temperature of 70 deg. F. and 50 per cent relative humidity, out of direct sunlight. The temperature should in no instance exceed 90 deg. and 55 per cent relative humidity. Low temperature and humidity have no serious deleterious effect, but rolls may require conditioning before fabricating if stored at temperatures at the freezing point or below.

Sheets should be stored in their original wraps and laid flat on smooth shelves under atmospheric conditions similar to those described for rolls above. They should not be stacked in piles more than 12 in. high.

Rubber derivative sheetings are virtually unaffected by dryness or dampness and hence special temperatures or humidity precautions are not generally considered necessary. Conditions in the average packaging plant are within the wide range which is not detrimental to such rubber derivative materials.

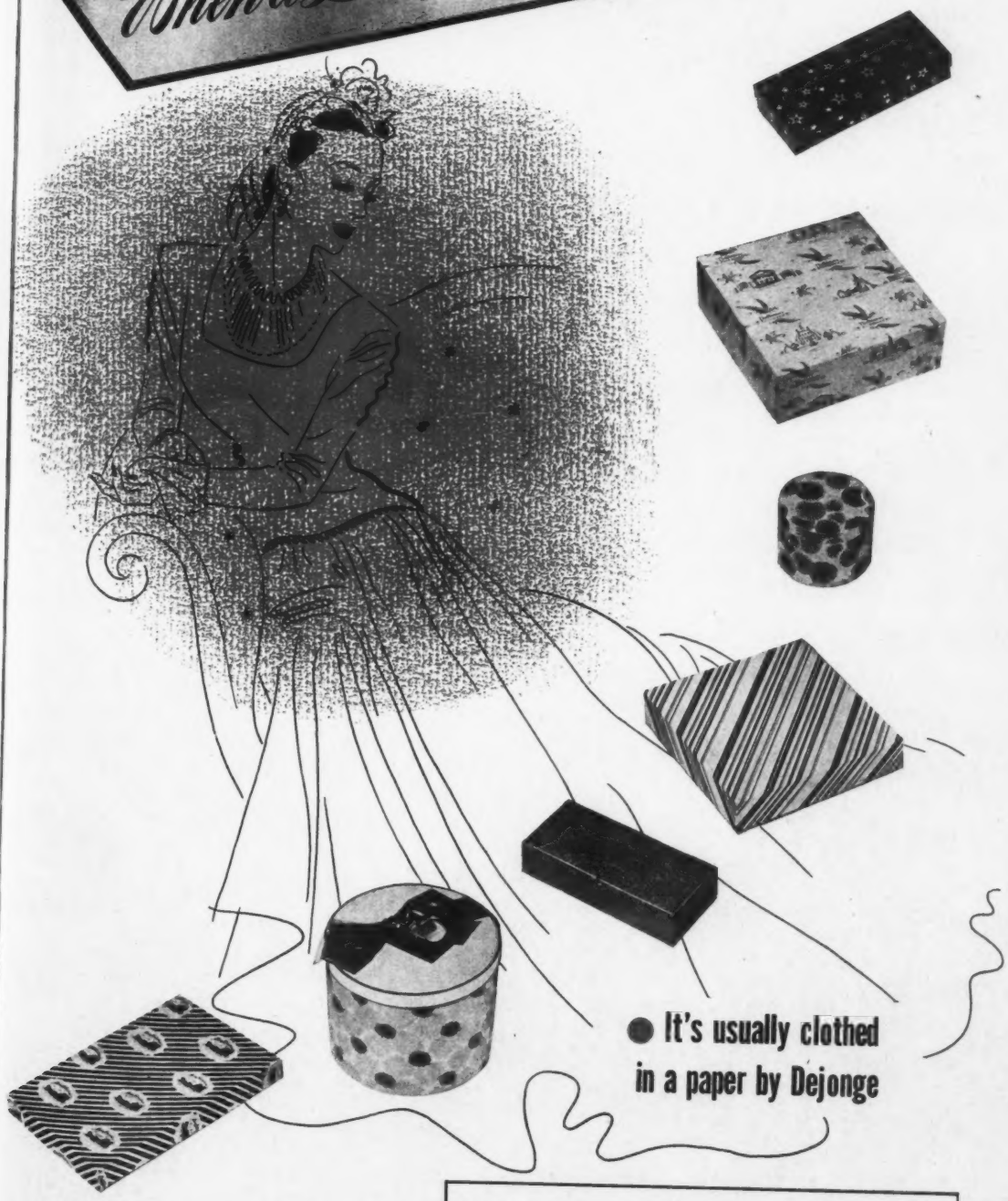
Materials are, however, affected by strong sunlight and should be shielded from the ultra violet rays of the sun either by storing in the dark or wrapping the rolls or bundles in opaque paper. Rolls should be stored on end, with the ends reversed every two or three months so that there is no tendency to inflex one end. No particular precautions as to circulation of air are required.

Moisture absorption of ethyl acetate sheetings is low and volume change, under storage conditions, is therefore very small. The plasticizers of these materials are not moisture-soluble or volatile and do not bleed.

The foils usually employed for the manufacture of rigid fabricated or drawn shapes have a very high softening point and can therefore be subjected to temperatures —in storage—up to approximately 145 to 150 deg. F. Precautions should be taken to avoid extreme changes in temperature during processing, such as multi-color printing, although the coefficient of thermal expansion is not generally excessive.

Foil which has been subjected to extremely dry conditions will, if brought into contact with humid air, expand about $^1/_4$ of 1 per cent (0.0025″ per in.), but this expansion is not experienced under normal changes.

When a Lovely Lady Buys a Package



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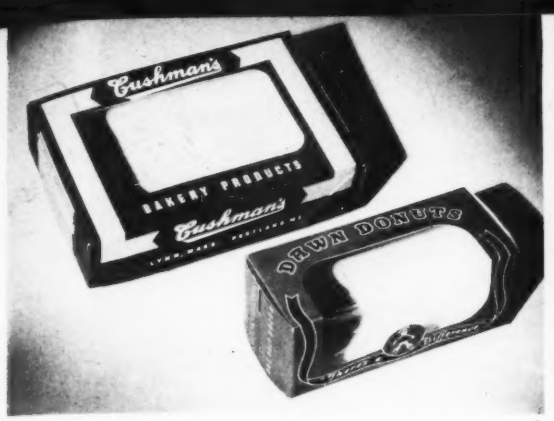

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1. Bakery cartons formed of grease-proof paper laminated to cartonboard by means of a wax base, moisture-proof adhesive. Photo courtesy The Menasha Products Co. **2.** Barrel top for crackers formed by laminating transparent sheeting to die-cut printed board Photo courtesy The Arvey Corp. **3.** Display hanger with laminated acetate surface permitting dealer markings and subsequent erasures with damp cloth. Photo courtesy The Arvey Corp.

Laminating and Combining

Lamination is the process of combining two or more sheet materials so as to form a new sheet having qualities inclusive of those of the component sheets and sometimes qualities in addition to those of any of the components. The term is most commonly used in packaging to refer to combinations of transparent film with other materials. However, a lamination need not necessarily include a transparent film, but may consist of combinations of treated papers of various types or may involve the use of adhesives with protective and adhesive qualities.

Transparent Film Laminations

Laminating in its present stage of perfection has been made possible through the development of a perfected cellulose acetate film, although, to some extent, regenerated cellulose is still used. In some cases, where the protective quality of the combined sheet is of prime consideration, rubber derivative films are also employed.

Cellulose acetate has a number of qualities which make it particularly well suited for laminating. It has a high resistance to atmospheric changes, neither shrinking nor stretching to any appreciable degree. This stability eliminates the danger of curling or warping.

Regenerated cellulose has the advantage of being considerably cheaper than cellulose acetate. Generally speaking, it is easier to work with. It affords the laminator a much wider range of adhesives and there is also less difficulty in the printing operation. However, it reacts to a much greater extent to atmospheric changes. Unless coated, it is not moisture-proof and when coated, it loses a great part of its primary cost advantage.

Rubber hydrochloride sheeting has the advantage of greater tensile strength and greater pliability than other transparencies.

Finished laminated sheets may be divided into two types. In one the printing of the image or message is directly on the transparent material in reverse and, after this is done, the printed transparent sheet is laminated to the respective stock. The other type combines a clear transparent sheet over the printed surface of the combining stock. This latter process is, naturally, the only process possible when the combining stock happens to be a fancy printed or embossed paper, a kraft or any similar type.

In the most commonly accepted technique, the transparent web is unrolled and the adhesive applied from a roller. The film then passes through a long drying oven which reduces the adhesive to a semi-soluble gummy state. It is then applied under a roller to the subject to be laminated. The combined sheets then pass through a different set of rollers under heat and pressure. This new application of heat softens the adhesive again just enough to make a perfect and permanent binding. The finished lamination then is either rewound or, depending upon the subject, it may be cut or sheeted.

Another process, known as the hot-melt method, is accomplished without the use of a solvent, the laminating being done immediately after the application of the adhesive to the transparency.

Still a third method sees the adhesive applied to the stock to be laminated and the transparent film brought to the sheet and pressed onto it by heat and pressure.

Recently, material manufacturers have produced transparent sheets already impregnated with an adhesive so

Cross References: Specially Processed Cartons, page 68; Decorative Foils, page 162; Printed Transparent Sheeting, page 166; Protective Materials—General Considerations, page 177; Protective Foils, page 180; Protective Glassine Papers, page 184; Transparent Wrapping Sheeting, page 188; Paper Bags: Types and Uses, page 204; Metal Foil Bags: Types and Uses, page 210; Bags: Special Types, page 228; Printed and Lithographed Labels, page 300; Paperboard Counter Displays, page 349; Lithographed and Printed Window Displays, page 351; Types and Functions of Adhesives, page 474; Coating, Laminating and Embossing Equipment, page 508.

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that direct lamination is possible without the application of an adhesive on the machine. For some purposes, material may also be obtained which requires nothing more than the application of heat and pressure to make the sheet actually self-laminating.

Transparent Lamination Qualities

First of all among its outstanding qualities is the fact that the laminated sheet is about 100 per cent moisture-proof and almost completely water-proof. Secondly, it may be truly said that the sheet is 100 per cent scuff-proof. It may be scratched, but ordinary handling will not mar it in any way. Its wearing qualities and strength are great. Many convincing tests have been made. For example, an ordinary coated paper was laminated with an acetate sheet. Before lamination, the paper was placed in a Schopper tester which broke the sheet after 16 double folds had been made. After lamination, the sheet stood 1116 double folds. Across the grain the same paper had an unlaminated double fold strength of 21 as compared with 805 after lamination.

The greatest quality of laminated sheeting is sparkling appearance. Basically, this is the reason for the popularity of laminations within both the carton and box covering fields.

The laminated package may be subjected to all kinds of handling and to all kinds of abuse. It may be picked up, examined and replaced, but the laminated film is virtually an armor plate and it may immediately be restored to its factory-like lustre simply by the application of a damp cloth to its surface.

Lamination Applications

The window box or carton is an ideal form of package which has proven its selling power and its ability to display the merchandise in a package, yet keeping it safe from unwarranted handling. Lamination is the ideal answer to the window box package for, instead of an insecure spot which must be glued around the circumference of the window, the laminated window box provides an aperture covered by the film coating of the box itself, without joints or creases.

For users of set-up boxes, lamination likewise provides the answer to a number of problems. Such boxes are frequently made of extremely fine papers which are highly susceptible to soilage. Since packages of this sort, as used on quality merchandise, frequently undergo a long period of use, it is important that such soilage be avoided. Here lamination provides the answer. It adds brilliance, lustre and durability to the beautiful cover papers. It reduces spoilage, both in manufacturing and in handling subsequent to manufacture.

Obviously, not every packaged product could or should be put into a laminated container. In some cases, it is impossible. A product coming in a large-area package and retailing for 5 cents or 10 cents, would find the use of a laminated package out of the question, but a more expensive product, possibly coming in a small package, has everything to gain and nothing to lose.

Strip Lamination

The science of strip lamination, which involves the procedure of running a number of rows of acetate of any width on sheet or roll in unison at one time, has also done much to reduce the cost factor, for, under this process, only the front and sides of the package can be laminated without touching the back. This same idea can be utilized to great advantage on an overall laminated package so that the glue flaps can be left free of acetate, permitting a laminated package to be run through the average gluer using regular glue.

Non-Transparent Combinations

A number of other forms of lamination have recently begun to occupy an increasingly prominent place in the packaging field.

Laminated bags and wraps, combining treated papers or various types, are being increasingly used. One laminated material utilizes a patented rubber wax composition as a protective coating. This is used as a laminating agent for wraps and cartonboards. Another recent development involves the lamination of foil to both sides of cartonboard, providing a folding carton with foil facing on both inside and outside. The resultant container is particularly suited for use for such products as tea. The interior foil liner prevents wick action and product contamination due to impurities in the paperboard. Cartons of this sort eliminate the need for an inner bag or liner.

For carton manufacture, a wide range of laminated boards are used. Glassine, vegetable parchment and grease-proof papers are frequently affixed to folding boxboard to give the composite boards the surface characteristics of these papers. Bond, sulphite or other papers with good printing qualities are used to provide a good outside printing surface.

4. Hanging store sign with laminated transparent sheeting face to provide long life. May be wiped clean with a damp rag. Photo courtesy Badger Merchandising Displays, Inc. **5.** Soap wraps are frequently laminated with printed transparent sheeting and a backing of alkali-resistant paper. Photo courtesy Shellmar Products Co.

4

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MADE MORE TENDER, JUICY, FLAVORFUL BY
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KROGER'S TENDERAY BEEF
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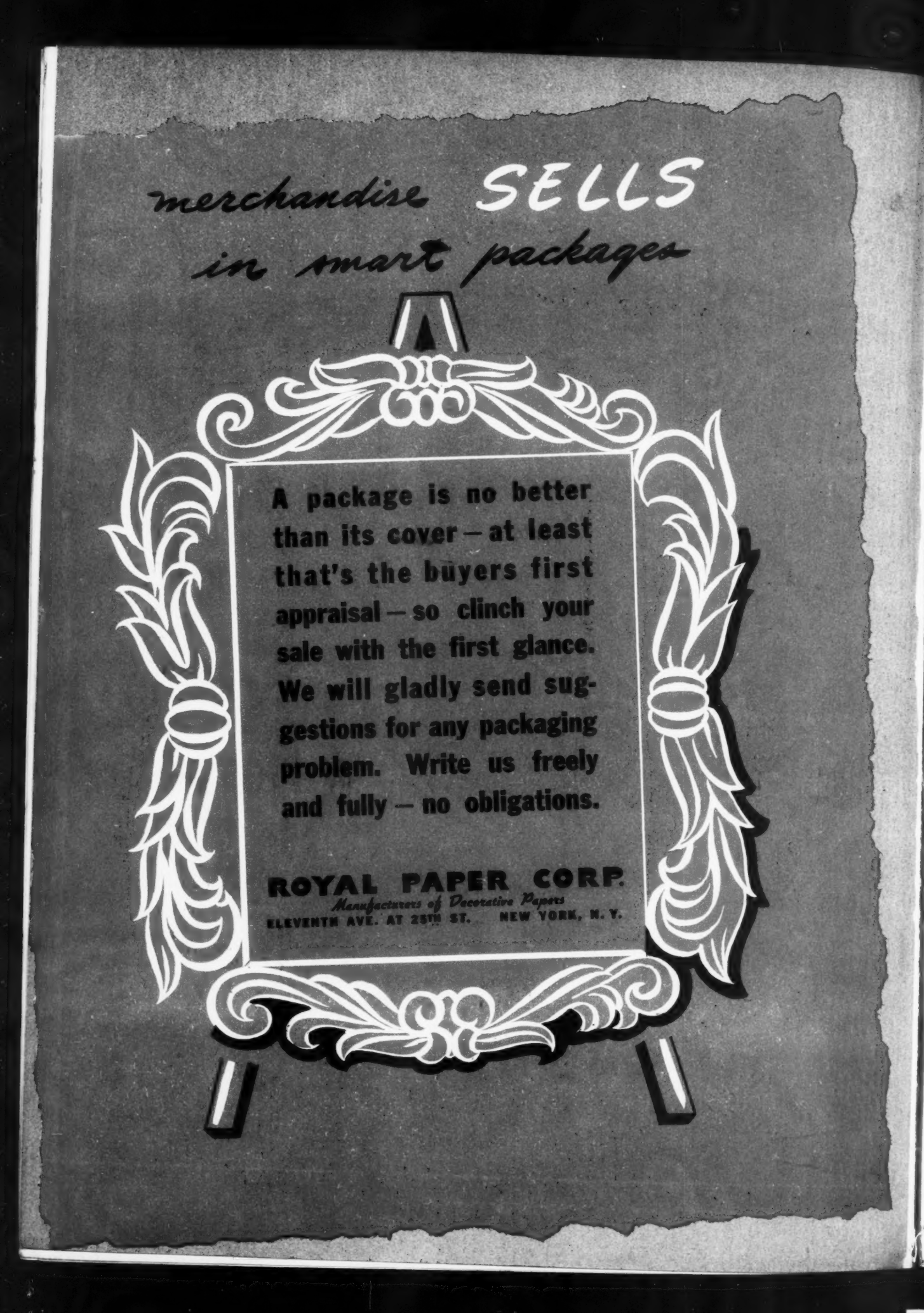
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Tarnish Resistant Papers

An anti-tarnish paper, whether in tissue weights or heavier weights such as parchment, is one that is made wholly from materials that do not contain ingredients, chemical or otherwise, that will cause tarnish on silverware or other highly polished metal articles. From this it will be seen that an anti-tarnish paper, as a wrapper, does not offer protection from tarnish, it merely is a wrapper that itself will not cause tarnish.

One of the fallacies, long held by the public to be a truth, is that black tissue, for instance, is a suitable wrapper for silverware. As a matter of fact, the dyestuff used in making black paper has a very decided tarnishing effect on polished metals and consequently black tissue is a very unsuitable material for wrapping. Practically all anti-tarnish papers are white, although in late years certain light tints have been developed from dyestuff materials that do not contain tarnish impurities.

Sulphur, by far, is the most common and the most harmful of tarnish impurities. It is present in the atmosphere in varying degrees. The atmosphere around a city such as Pittsburgh, for instance, contains much more sulphur and sulphur fumes than would be found in the atmosphere of a rural community.

The United States Bureau of Standards specifies that anti-tarnish tissues for wrapping silverware must contain no more than .0008 per cent sulphur. This has likewise been established, by one of the large silver companies, as a maximum for any paper that actually touches silver. On paper, on the outside of boxes, which does not touch the silver, the percentage is .0016.

Parchment is made from wood pulp which is manufactured by the so-called sulphite process and the paper itself is parchmentized by treating with sulphuric acid. Most parchment papers do not have satisfactory anti-tarnish qualities, but some of the more expensive parchments have been washed and rewashed to remove all traces of free sulphur and can be used with more or less safety in silver wrapping. Bags made of parchment paper are usually lined with transparent cellulose to prevent a tarnishing action of the parchment itself. This transparent cellulose is practically air-tight, which prevents tarnishing impurities in the parchment from reaching the silverware and is also in itself an anti-tarnish material.

Anti-tarnish tissues are of two types, white and kraft. White anti-tarnish tissue, or silver tissue as it is sometimes called, is specially treated No. 1 grade. It contains a higher grade pulp and must be handled more carefully all through the manufacturing process than regular No. 1 white tissue. Every trace of sulphur must be eliminated. Consequently it is more expensive than the ordinary No. 1 grade.

Most kraft tissue will pass this test, too, for the reason that kraft pulp is made by a different process than sulphite pulp used in manufacturing white tissues—a process which, by its very nature, eliminates the possibility of sulphur being present. Hence its use is generally confined to the wrapping of hardware items, machinery parts, etc., while white silver tissue is used for wrapping higher quality articles such as those made of silver, copper, brass, etc.

A new type of cotton-lined paper, available in the form of bags or cut-to-size sheets, is also coming into use where anti-tarnish qualities are desirable. The soft cotton lining serves to absorb shipping shocks, while the paper backing makes for easy handling and permits fabrication into bags and rolls.

Flannels of anti-tarnish type are also being used as wraps and as bags of round bottom, square bottom, draw string and other types.

Rust Preventatives

Closely related to tarnish prevention is the problem of rust prevention, a problem affecting exporters and those who ship by water in particular, but affecting all manufacturers of metal packaged products to a degree.

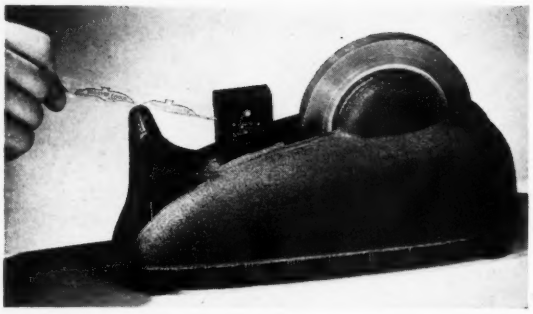
A number of water-proof papers are available, consisting essentially of two sheets of kraft paper of various weights with a layer of water-proof asphalting between. One or both sheets of paper may be creped to provide for stretching in one or both directions. Water-proof papers can also be obtained with a reinforcement of cotton or jute cords imbedded in the asphalt between the two sheets of paper.

These papers are extensively used for wrapping textiles, tires and metal products. Water-proof papers may also be obtained in combination with burlap, cotton cloth, jute fibre or thin sheets of metal foil. Coils of steel and rolls of cloth are frequently wrapped spirally with strips of this burlap paper.

Where such water-proof wrappings cannot be used for physical reasons or for reasons of expense, some manufacturers have found it practicable to insert into the shipping container bagged quantities of silicate jell (silicon dioxide)—a chemical having the ability to absorb large quantities of moisture. This serves to hold down the relative humidity within the container over an extended period of time, maintaining this below the critical point of 30 per cent and thus effectively eliminating the formation of rust.

Cross References: Decorative Tissues, page 172; Waxed Papers: Types and Uses, page 181; Vegetable Parchments: Types and Uses, page 185; Heavy Duty Multiwall Paper Bags, page 222; Bags: Special Types, page 228; Corrugated and Solid-Fibre Cases, page 516.

Package Sealing Tapes



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A wide range of adhesive treated tape materials have been developed to facilitate the sealing of corrugated and fibre containers, bags, envelopes, wraps, etc. This development has come about because only a limited portion of the trade marked merchandise sold in this country is adaptable to packing by automatic wrapping machines. There remains a large field of trade marked merchandise which still has to be wrapped by hand or on semi-automatic equipment and which can be effectively sealed by the use of adhesive treated tape.

Gummed Sealing Tapes

Gummed sealing tapes are usually made of kraft paper gummed with a good grade of animal glue. Three standard weights, according to the Department of Commerce Simplified Practice Recommendation No. R 114-30, are 35 lb., 60 lb. and 90 lb. These figures refer to the basic weight of the paper before gluing. The tapes are applied with the aid of mechanical feeding and moistening devices. These range from the simple tear-off type of moistener to units equipped with automatic measure, moistening control and cut-off devices. The application of such tapes to the sealing of corrugated containers is described in detail in the article Tape Sealing Shipments in the Shipping Section of this volume.

Scotch Cellulose Tape

For the sealing of unit packages, bags, etc., and for the attachment of small items to cards, tapes have been developed utilizing transparent cellulose ribbon and a tacky adhesive. The tape is supplied to the user (in varying widths) in rolls for use in conjunction with special dispensing and tear-off devices.

Cross References: Protective Materials—General Considerations, page 177; Bag Closing and Sealing Methods, page 212; Transparent Labels, page 308; Labeling Machines and Devices, page 420; Bag Filling and Sealing, page 444; Types and Functions of Adhesives, page 474; Tape Sealing Shipments, page 542.

1. Cellulose tape dispensing device equipped with printing attachment and utilizing a powdered ink conveyed by an engraved brass wheel to the adhesive treated surfaces of the transparent tape. **2.** Examples of imprinting as applied to transparent tape by the tape printing machine. Photos courtesy The Printape Co. **3.** Thermoplastic treated pre-printed paper bands are used in conjunction with this heat-sealing device to label or band varied products and packages. In the present instance, the bands are being used on frankfurters and are varnished to achieve grease and water resistant characteristics. The adhesive is non-toxic and can, therefore, be used in conjunction with food products. Photo courtesy the Dennison Mfg. Co.

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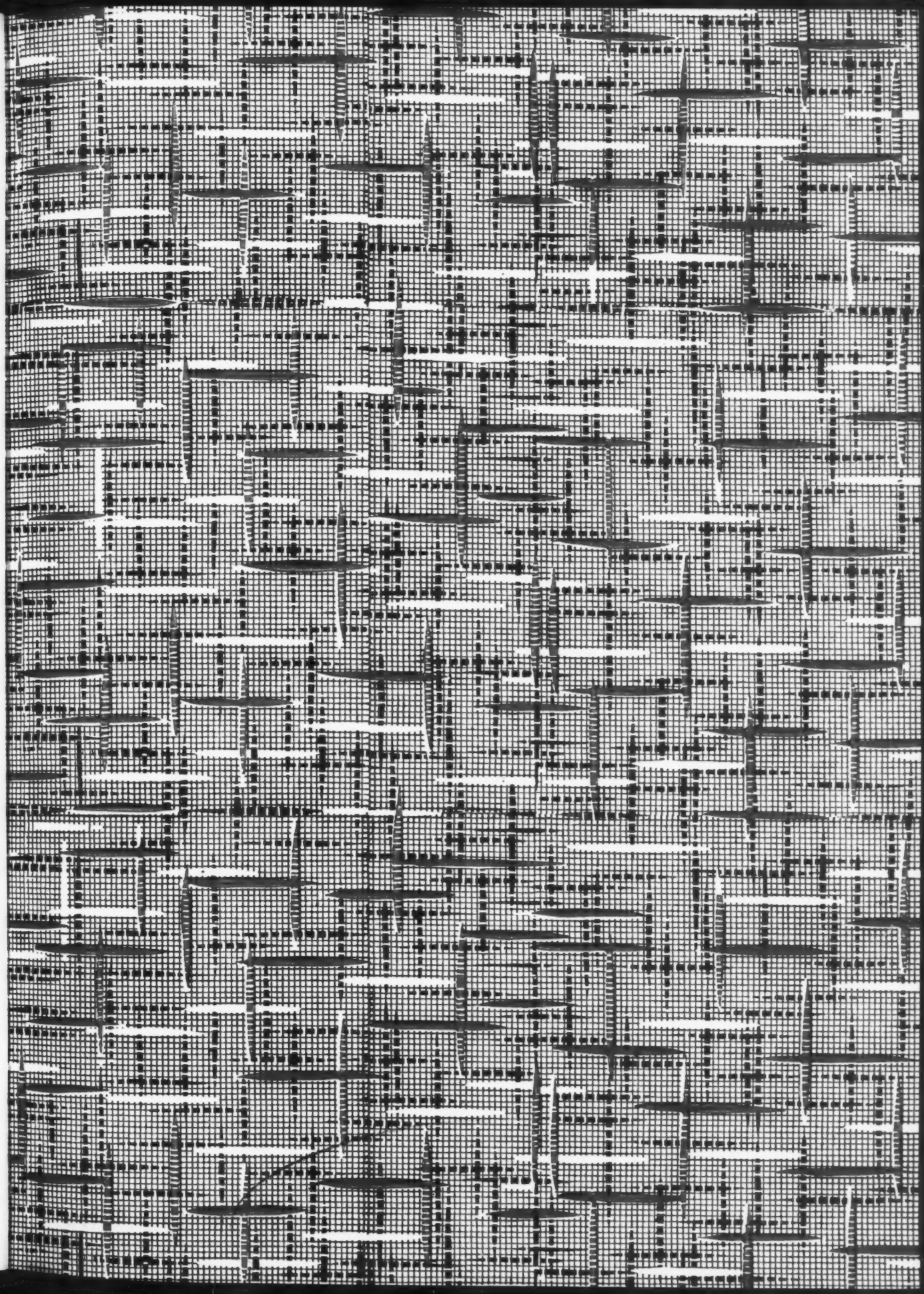

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KUPFER BROTHERS COMPANY

53 *Years of Successful Fancy Paper Manufacturing*

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CHICAGO, 145 W. HUBBARD ST.

★ MILLS: Northbridge, Mass.

This is printed on CRASHETTE 1482

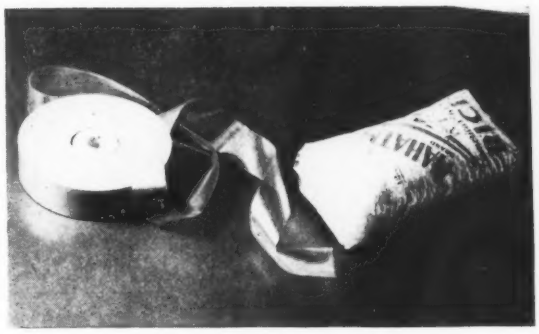
One device, recently developed, incorporates an imprinting unit in the dispenser. Using a specially prepared ink, this unit prints trade marks, company names or other insignia on the adhesive side of the tape immediately prior to use.

Heat-Sealing Tapes

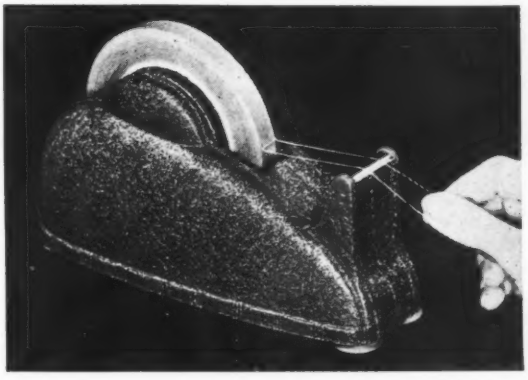
Another innovation is represented by the group of heat-sealing tapes which neither require moistening nor are tacky like the Scotch cellulose tape. These heat-sealing tapes are formed of paper, transparent cellulose or cloth. All are treated with a thermoplastic adhesive which fuses under the application of heat, but which are otherwise dry and non-tacky.

Thus, the tape may be applied to the package dry and can, therefore, be accurately located. Adhesion is secured by means of small heated applicators. Tapes may be pre-printed in any manner desired. For sealing transparent cellulose bags, foil bags or paper bags, conventional heat-sealing machines can be used for crimping, only slight modifications of machine construction being necessary. For other applications, a small hot plate is used, the strip of tape being laid face up on the plate and the package being placed on top of it. The weight of the package or the slight additional weight of the operator's hand is sufficient to effect a tight seal. The thermoplastic adhesive is odorless, tasteless and non-toxic.

More recent developments in this field involve the introduction of thermoplastic tapes formed of coated and uncoated paper stock and of pyroxylin and foil stocks. The thermoplastic tapes may be applied to waxed surfaces, oil treated surfaces, glazed and coated papers, glass, plastics, tin plate, wood, as well as all types of printed and varnished surfaces.



4. Transparent cellulose tape with heat-sealing adhesive. The adhesive does not impair the transparency of the tape and can, therefore, be utilized inconspicuously in sealing transparent bags.



5. Scotch cellulose tape dispenser with cut-off device. Photo courtesy Minnesota Mining & Manufacturing Co.

6. Hand operated heat-sealing device used for applying thermoplastic tape. **7.** Thermoplastic tape as used for sealing plain transparent cellulose bags. **8.** Application of the same type of tape to waxed paper bags. **9.** Heat-sealing tape applied as a label-seal to a foil bag. Photos courtesy Seal, Inc.

6

7

8

9

1

1. A Christmas assortment of food packages decorated and protected with shredded wax glassines. Photo courtesy Robert Gair Co., Inc. **2.** Six glass tumblers fitting loosely in a wooden box use shredded transparent cellulose for both cushioning and decoration. **3.** A decorative gift container for which the purchaser selects an assortment of cosmetic items. Shredded cellulose provides both decoration and the means of adjusting any assortment, selected by the consumer, to a single container.

Shredded Paper and Cellulose

Shredded paper, as its name implies, consists of long slivers of paper materials forming a resilient mass useful in packaging as a protective padding or cushion. In this respect, it provides a number of advantages over excelsior, since it is somewhat less inflammable and it does not break down into dust and lint.

Originally old paper was utilized and aesthetic considerations ignored. Much such shredded paper is still used for packing items into crates for shipment. Many firms use machines to shred their own paper waste.

However, packagers have found that decorative varieties frequently meet special needs. Waxed glassines, cellulose sheets, plain, colored and fancy papers are today shredded to provide cushioning effects of great beauty, capable of being used in conjunction with the finest packaging materials.

For irregularly shaped objects, which do not lend themselves readily to standard sizes of containers, shredded papers serve as the means of adjusting to the size of the outer pack. This is true in the case of fruits, baked hams, etc. Glass packed products, packaged in multiple units for gift sets and sampling purposes, are likewise very frequently protected by shredded paper both to guard against breakage in shipping and for eye appeal.

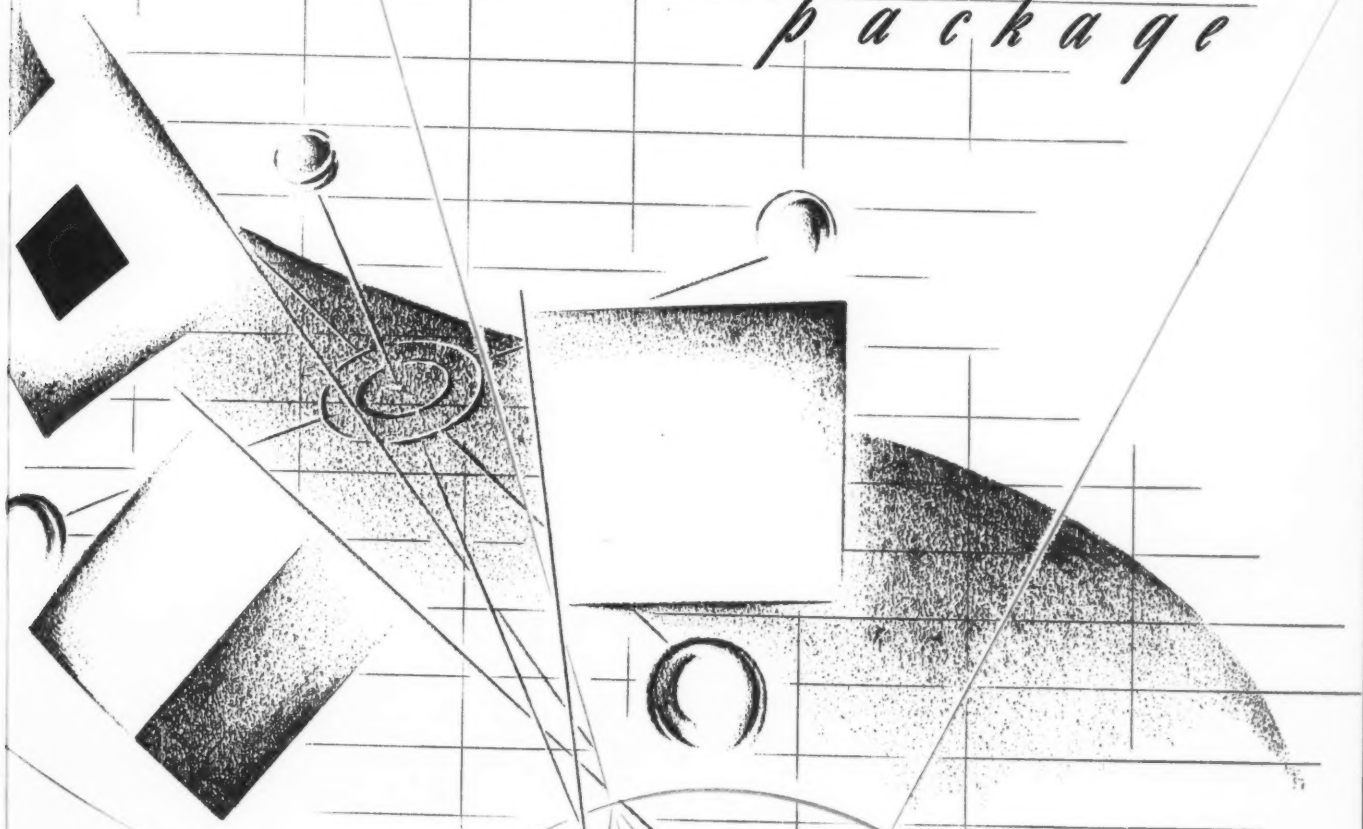
2

3

For a good

"ALL-WEATHER"

package



Wyomissing Papers

Few Packages

are designed for a single season . . . fewer still to sell in a restricted Marketing Area

IT'S an ill "trade wind" that blows these days for the "fair-weather" package. All merchandising encounters many extremes and the salable package must "ride out" many a storm . . . *climatic as well as economic.*

The wrap or box top, then, becomes a major calculation. It must be durable, fast-to-light, moisture-resistant, alkali-proof, and, of course, it must be artistically attractive.

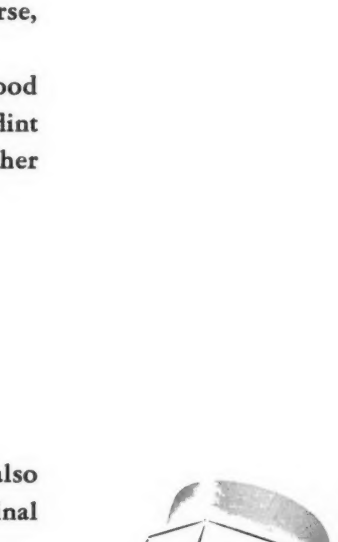
From stability to salability, Wyomissing Papers meet every good packaging requirement. To the basic strength demonstrated by flint glazed paper for more than a century, Wyomissing adds many other conspicuous packaging paper advancements:

"Air-filtered Whites and Tints"
"Fast-to-Lights" in a wide range of colors
"Alkali-Proof," withstanding Alkali stains
"Moisture-Resistant," resisting excess moisture from the outside as well as the ability to retard the drying out of any required moisture inside the package

Finger marks, dust smudges and other soil from handling are also easily removed with a slightly damp cloth, restoring the original freshness of the package.

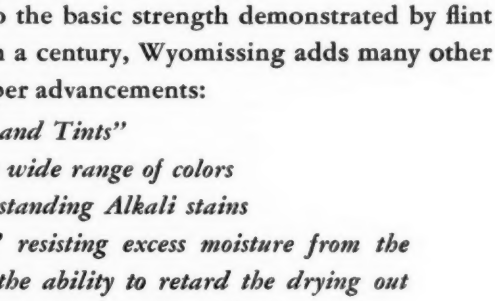
In color range, Wyomissing Papers are almost limitless. From the richest, most intensively brilliant color, to the most delicate pastel shade, Wyomissing Papers furnish to the designer, the printer, the manufacturer, "color without ink and gloss without varnish."

Economically, this is highly important, as is the fact that Wyomissing Papers may be supplied in forty-inch-wide sheets.



WYOMISSING PAPERS

READING, PENNA.



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Printed in U. S. A.

Resin Treated Papers

Paper coating and paper impregnating to achieve decorative or protective effects have long been practiced and, in fact, are an essential part of the paper making art. In recent years, however, the development of synthetic resins, rubber derivative materials, waxed-rubber compounds and a number of other materials has made possible a whole series of new treatments for papers generally grouped under the too narrow heading of "resin treatment." Among the most familiar of these to packagers are the pyroxylin coated papers, the vinyl coated papers and boards such as are used for closure linings, lacquered papers in which cellulose nitrate or cellulose acetate lacquers are utilized and rubber-wax composition coated papers such as are being increasingly adopted in the cheese industry and in other fields.

So broad is the field and so specialized are the various types of papers that the reader's convenience will probably be best served by an alphabetical listing of types of coatings and papers derived therefrom.

Air-brush coatings: A process in which a liquid mixture of coating pigment and adhesive is atomized by an air pressure spray and then sprayed onto the moving paper web.

Air-knife coatings: A process differing from that described above in that a thin flat jet of air is used to remove the excess coating from a freshly coated sheet. The coating is applied in excess quantities and in a semi-fluid state by means of a roll applicator which coats the paper. It is removed immediately by the air knife which also helps to give a smooth surface to the remaining freshly applied coating.

Aluminum papers: A paper coated with aluminum powder. Sometimes used for wrapping food products and tobacco, generally as a substitute for foils.

Casein coatings: Widely used in the sizing of papers. This material is a protein obtained from milk.

Diaphanic papers: A highly transparent paper made of a chemical wood pulp. It is printed by a lithographic process and then impregnated with a lacquer containing turpentine. The dried sheet is treated with an adhesive by means of which it can be applied to a glass surface. Occasionally used for label purposes on glass containers.

Dope: Trade term signifying a solution of cellulose acetate or cellulose nitrate or ethyl cellulose or benzyl cellulose in a volatile solvent such as acetone for use as a coating material.

Dry coatings: Another term frequently used for hot melt coatings.

Duplex asphalt paper: A water-proof paper formed by laminating two sheets with a film of asphalt. Generally used for fibre containers and for moisture-proof bags.

Glycerin: Used as an impregnating agent in some instances where products to be wrapped must be protected from air carrying moisture.

Gold papers: Papers coated with a gold color metallic bronze incorporated into a lacquer solution.

Grease-proof coatings: There are four general types of grease-proof coatings. Refer to headings for casein coatings, lacquers, hot melt coatings and silicate coatings.

Half-fine metallic papers: A paper produced by laying patches of thin copper or aluminum alloys thereof on an adhesive coated sheet. These patches overlap each other and form a continuous surface. A subsequent brushing process frees the overlapping patch edges, leaving a smooth sheet.

Heat-sealing papers: Many varnished and lacquered papers have heat-sealing qualities which facilitate their use on modern packaging machinery. Among these are varnished and lacquered papers in which the coating has incorporated in it quantities of resins or other thermo-adhesive materials. Hot melt coatings are, by their very nature, heat-sealing since they will soften again under heat. Films formed of rubber-paraffin wax compositions or papers coated with such compositions are likewise heat-sealing.

Hot melt coatings: Thermoplastic coatings used as alternative to lacquers or spirit varnishes. These are melted before application, then picked up by a heated roller and transferred to the web. A high gloss varnish is achieved. More important, perhaps, a high moisture resistance and resistance to fats, oils, greases, soaps, abrasion and scuffing are attained.

Impregnation: The process of treating paper or paperboard with a liquid used in hot asphalt treatments, in waxing and in a number of other cases.

Lacquered glassines: Glassine papers are highly grease resistant and are hence utilized for a vast number of packaging purposes, particularly for the preservation of goods, tobacco and chemicals. The application of lacquers to glassine makes them practically impervious to air and vapors and thus serves to extend their field of usefulness.

Lacquers: A broad group of materials used for coating papers to achieve decorative effects and glossy appearance and to enhance the color values of inks.

Cross References: Paper Containers for Liquids, page 90; Decorative Materials—General Considerations, page 156; Protective Materials—General Considerations, page 177; Protective Foils, page 180; Waxed Papers: Types and Uses, page 181; Protective Glassine Papers, page 184; Vegetable Parchments: Types and Uses, page 185; Transparent Wrapping Sheeting, page 188; Laminating and Combining, page 193; Bags: Special Types, page 228; Surface Coatings, page 502; Coating, Laminating and Embossing Equipment, page 508.

XUM

They are also used to achieve protective effects such as scuff-proofness, moisture-vapor resistance, etc. Lacquers may be applied to papers before or after such processes as printing. Lacquers consist of solutions of natural or synthetic resins such as cellulose nitrate, cellulose acetate, methyl cellulose or benzyl cellulose in an organic solvent. To this may be added modifying agents such as plasticizers, resins, waxes or pigments. The solvent evaporates, leaving the dissolved material as a shiny, continuous protective film on the surface of the treated paper.

Pyroxylin coated papers: Papers which have been coated with pyroxylin lacquers. Widely used for box coverings, labels, food wrappers, tobacco wraps, etc. Also fabricated in board stock weights for use in cartons and in displays. Pyroxylin coated papers are made in gold, silver, copper and in a wide range of tinted metallic finishes. Coating is water-repellent and has a high deep gloss finish.

Rubber derivative coatings: These are made for high grade, low protein content rubbers. This rubber is put into solution in a solvent, forming a heavy viscous non-drying cement. The rubber cement is placed into jacketed reactor and is heated for a period of time with a catalyst. By controlling the heat and time, the physical characteristics of the product can be accurately controlled. The result of the reaction is a family of resins of differing viscosities. These resins are recovered from the solvent as a finely divided powder which is vacuum dried. The powder is then dissolved into a solvent and this is deposited as a film on the paper to be treated. The film is glossy, non-tacky, heat-sealing and clearly transparent.

A wide range of materials is made by this method to achieve varying degrees of moisture-vapor-proofness or other desired qualities. Coatings have a good anchorage to the paper. They can be heat-sealed at temperatures of from 275 to 350 deg. They can be prepared to give a wide range of gloss finishes. Thus when applied over labels, they are made with a very high gloss. When coating parchment paper, kraft paper and similar materials, the degree of gloss is not as important as other qualities more desirable. Coatings have a low permeability to gas and particularly to air and are highly moisture-vapor resistant.

Mixed with waxes, these rubber derivative materials are used as hot melt coatings. The addition of rubber derivatives to paraffin wax substantially increases the toughness of the wax. It improves its gloss and materially strengthens the heat seal obtained when films of these mixtures are compared with films of the wax alone.

Silicate coatings: Papers and paperboards are sometimes coated with sodium silicate to give them a hard surface resistant to wear. Silicated board is also used on the inner surfaces of containers for products which would exercise an abrasive action upon ordinary boards and thus cause self-contamination with paper lint.

Silver papers: Papers lacquer coated with solutions into which flaked aluminum powder has been mixed. After coating, such papers are sometimes calendered or embossed. Aluminum dusted papers are made by applying an adhesive composition to the paper and then dusting with a dry aluminum powder. To prevent running off of the metal, a protective top film of transparent lacquer is often applied.

Spirit varnishes: These are alcohol solutions usually of manila gum which dry by the evaporation of the solvent. They give a clean smooth finish over most grades of paper and are usually run over print. Care must be exercised not to use inks soluble in alcohol on sheets to be spirit varnished. (See also varnishes.)

Varnishes: Varnishes are solutions of resins (copal, shellac, etc.) in a solvent such as turpentine or linseed oil. Usually a drier is also included. After evaporation of the volatile elements in the solution and the oxidation of the non-volatile elements, a thin shiny layer of the dissolved material remains. Varnishes are often utilized as an after-print coating and are then called overprint varnishes.

Vinyl resins: Vinyl resins or co-polymer vinyls are formed by the simultaneous co-polymerization of vinyl chloride and vinyl acetate. The resultant product is a tough, colorless, transparent resin soluble in a number of solvents. Vinyl resins are applied by three principal methods. The first is the solution coating method in which a roll or doctor blade is used to control the application of the film. In such cases, it is necessary to "force dry" or bake the coated stock in order to rid the film of the last trace of the solvents, since co-polymer vinyl resins are not heat hardening. For film thicknesses such as are used in connection with the packaging industry, a few minutes of such baking at between 250 to 33 deg. F. is usually sufficient.

Calender coating of vinyl resins is accomplished by working the plastic mass into a thin film over heated rolls, then calendering this film continuously onto paper which is fed through the machine at the same rate as the film is formed. Vinyl calender coated papers are widely used as liner material in closures for food products Solution coated papers seem to be better fitted for the wrapping grades, since a thinner coat can be applied by the solution method. Aluminum foils such as are used for cheese wrappers are frequently treated with a thin clear coat of co-polymer vinyl.

The thermoplastic qualities of co-polymer vinyl resins suit them particularly for cases where heat-sealing is required. Solution coating is used on labels to achieve resistance to water, alcohol, alkali or grease.

The third coating method has but recently reached the commercial stage and involves the use of vinyl emulsions. The method is particularly desirable for coating the surface of porous materials with a minimum consumption of resin per unit of surface covered. This is possible because the water strikes into the porous surface first and thus prevents penetration of the lacquer. The method seems to have particular application for use in conjunction with pulp containers.

Wax-rubber coatings: Wax is frequently mixed with rubber derived materials to form moisture-vapor resistant coatings of the hot melt type.

BAGS

Section Six

Pages 203 to 230

PAPER BAGS: TYPES AND USES

TRANSPARENT CELLULOSE BAGS

METAL FOIL BAGS: TYPES AND USES

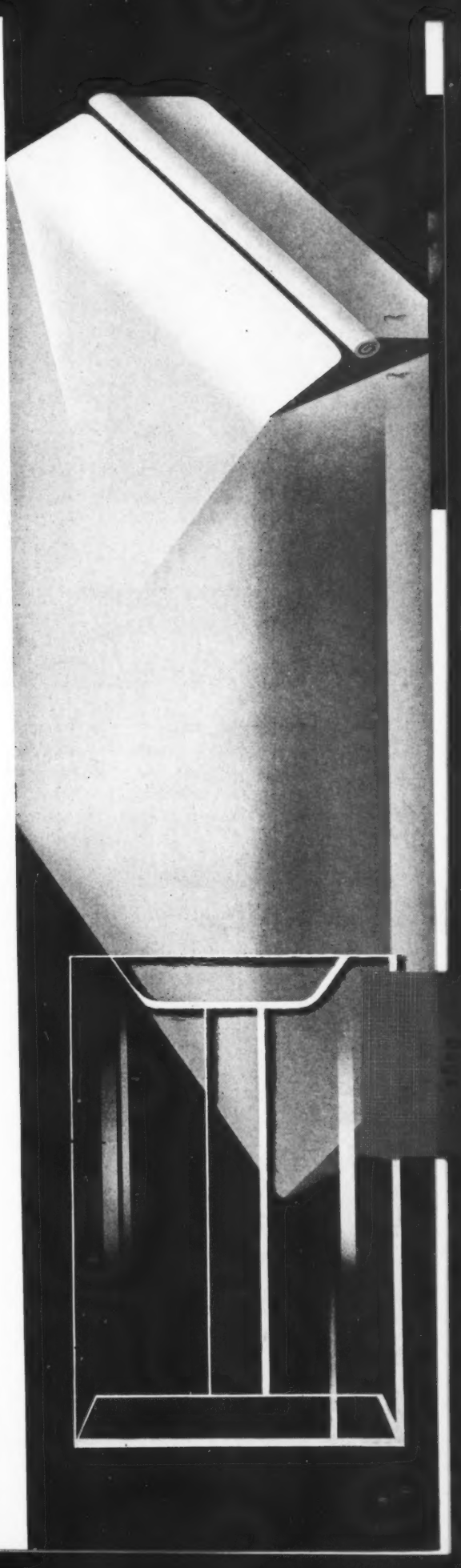
BAG CLOSING AND SEALING METHODS

MERCHANDISE ENVELOPES AND PACKETS

HEAVY DUTY MULTIWALL PAPER BAGS

COTTON AND BURLAP BAGS

BAGS: SPECIAL TYPES



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1. Flat bag with plain bottom.

2. Square back bag showing forming of bottom

3. Satchel bottom bag.

Paper Bags: Types and Uses

The paper bag has always been recognized as an inexpensive and efficient means of containing and transporting merchandise. In recent years, with the development of new printing, new machinery and new bag structure, it has likewise been recognized as a suitable merchandising container capable of competing on an equal basis with other types of packages and capable of providing shelf display values and consumer convenience features of a high order.

There are seven advantages which, alone or in combination, give the paper bag its place in the packaging field. These advantages are:

1. Economy
2. Protection
3. Identification
4. Unit of Measure
5. Liners
6. Display Package
7. Shipping Unit

Here are some typical examples of the application of paper bags to these fields of usefulness:

Economy: Recently a prominent coffee roaster was able to capitalize on a unique distribution system to change from a relatively expensive container to a less expensive, yet attractive and efficient paper bag. By doing this, the coffee roaster found it possible to reduce the price of his coffee to the consumer and increase the market for his product.

Protection: Sugar refiners are now packing consumer units of sugar in sift-proof bags which are filled and sealed by automatic machinery. These double walled paper packages offer complete protection to the sugar in its journey from the refiner to the wholesaler, retailer and consumer. Refinery purity is delivered to the kitchen because the paper package protects the sugar from dust, dirt and contamination.

Identification: In order to protect themselves from the activities of "bootleg" parts manufacturers and to make sure that dealers and car owners get genuine factory replacement parts, the larger automobile manufacturers are using paper bags (as well as other types of containers) to identify parts which are not easily stamped or trade marked.

Unit of Measure: Often it is desirable that the ultimate users of the product receive a pre-measured quantity. A common example of this is in the case of coffee urns and other coffee making devices, where a uniformly good cup of coffee can best be obtained by using the same pre-determined quantity of ground coffee for each batch. The inexpensive and easily opened paper bag is ideal for such purposes.

Liners: Many dry products, which are packed in tin or in cartons, need to be kept from contact with the wall of the container. Most manufacturers of drug products

Cross References: Transparent Cellulose Bags, page 206; Metal Foil Bags: Types and Uses, page 210; Bag Closing and Sealing Methods, page 212; Merchandise Envelopes and Packets, page 218; Heavy Duty Multiwall Paper Bags, page 222; Bags: Special Types, page 228; Weighing and Filling Dry Products, page 381; Bag Filling and Sealing, page 444; Bag Making Machinery, page 462.

Acknowledgment is made to George E. Chisholm of the Union Bag & Paper Corp. for aid and advice in the preparation of this article.

If it's Cellophane* TRADE MARK

Dobeckmun has it!

As America's first fabricators of "Cellophane" bags, Dobeckmun has an improved style and type for every job plus many new "Cellophane" packaging specialties, such as

Cellulose Acetate Lamination

Opening Tape

Printed "Cellophane"

See list other side

* "Cellophane" is a trade mark of E. I. du Pont de Nemours & Co. (Inc.)

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD

FIRST CLASS PERMIT NO. 2172, SEC. 510, P.L.&R. CLEVELAND, OHIO

THE DOBECKMUN COMPANY

3301 Monroe Avenue

CLEVELAND, OHIO

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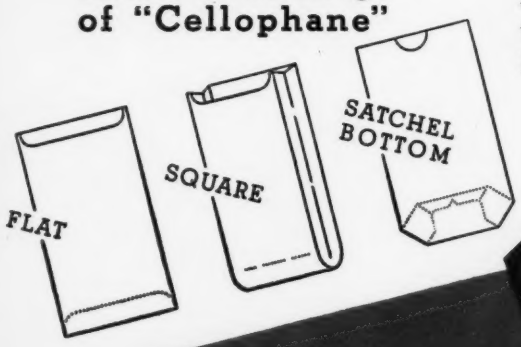
Flat, square, and satchel bottom bags of "Cellophane"



"PRIS-O-MATIC"* bags of "Cellophane"

Sift proof, gas tight, more moisture proof. A new patented, fast loading rectangular shape.

Dobeckmun custom made specialties and stock items for your consideration

"ZIP-TAPE"* Opening Tape

Gives transparent wrapped products a distinctive appearance—a new convenience to the consumer.

Also pre-applied to printed "Cellophane" for hand wrapping, known as "Zip-Wraps."

"DOPLEX"* Lamination

A permanent, brilliant armor for packages, displays, charts, and literature.

"Plasticolor"* Cover Stock

TRADE MARK

THE DOBECKMUN CO., CLEVELAND, OHIO

A new permanent finish by laminating "Cellophane" cellulose acetate film on a fine Beckett cover stock.

* Trade Mark
Copr. The Dobeckmun Company
25-1140

The DOBECKMUN COMPANY, CLEVELAND, OHIO

O. K. Please send us samples and information on the following:

"CELLOPHANE" BAGS	☐	PRINTED "CELLOPHANE"	☐
POUCHES	☐	"DOPLEX" LAMINATIONS	☐
"ZIP-TAPE"	☐	"PLASTICOLOR" COVER STOCK	☐

Want to use for _____

Name _____

Address _____

City _____ State _____

This is a sample.

Note brilliance and durability.

CUT OUT WITH SCISSORS AND MAIL. NO POSTAGE NECESSARY

4. Automatic self-opening bag.

5. Automatic bag with transparent panel.

6. Automatic bag with tin tie.

and other dry materials find paper bags indispensable for this purpose.

Display Packages: While the paper bag has long served as a display package for such products as coffee and flour, the advent of transparent cellulose and combination cellulose and paper bags, and the vast improvement in bag printing, have transformed the paper bag into a package of exceptional display value.

Shipping Unit: For non-rigid or semi-rigid products, the heavy paper bag recommends itself as the most economical shipping container available. The heavy square bag used for shipping 24 1-lb. units of coffee safely and economically is a good example of this field of service.

There are four shapes of bags available. These are, namely, the flat, the square, the satchel bottom and the automatic or self-opening. Each shape serves its own specific purpose and has its own advantages and disadvantages over the other shapes. A brief discussion of these follows:

The Flat Bag: This shape, as may be seen from the accompanying illustration, is simply a tube of paper with one end turned over and pasted down to form the bottom. Due to its more rapid speed of production, this is the most economical shape of machine made paper bag. However, since it has no gusset or tuck at the side, to preform the bottom, the contents will necessarily bulge out. In many cases this is an advantage since it gives the appearance of extra bulk or quantity whenever or wherever the package is displayed.

The Square Bag: This differs from the flat bag in that it has a tuck or gusset at each side. The bottom can be formed by thrusting the hand inside of the bag and squaring it out. Because it has three definite dimensions, the square bag is better adapted to package articles of a cubical form.

The Satchel Bottom Bag: This shape is made from a flat tube without tuck or gussets in the side, but does have a small diamond shaped pre-formed bottom. The chief advantages of this shape are:

1. Its wide mouth which makes filling easier.
2. Its pre-formed bottom which enables the bag to stand upright while being filled.

The Automatic Bag: This shape, sometimes known as the self-opening, is in some respects the most efficient of all machine made paper bags. Due to the extreme complications of manufacturing the square preformed bottom, it is relatively more expensive than the other shapes of machine made bags and somewhat more inflexible in its available combinations of dimensions. It can, however, be opened easily and stands absolutely upright, either empty or filled.

Design Considerations: Bags are printed with molded rubber plates and it is, therefore, unwise to have a design incorporate too fine reverse work or lines too closely spaced, for this makes it almost impossible for the engraver to etch deeply his ink plates from which the rubber plates are molded.

Printed matter should not fall on the paste lines of the bag as the adhesive will dilute the oil ink, causing it to run and blur. Designs should not end exactly on the fold of the bag for it is hard to hold the form constant and at the same time maintain maximum production speed. Designs should not be too close to the sides or bottom of the bag if it is to be run on a rotary press, since it is necessary to allow sufficient clearance to carry the bag through the printing press without causing the ink to smear.

It will be noted that all of these considerations are imposed upon the designer by the nature of the bag making and printing process. Packagers will be well advised to consult closely with their bag suppliers prior to final decision on bag designs and thus to eliminate production problems requiring unusual handling or slow speed production.

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Transparent Cellulose Bags

There are now practically no limitations to the packaging purposes to which transparent cellulose bags may be put, except those set by the size, shape, weight, liquidity or some other characteristic of the product to be packaged.

Protection problems met with in the packaging of foodstuffs and other perishable, easily damaged products have been effectively solved by the development of numerous special grades and weights of transparent films. Bag construction has been perfected to the point where sturdy, single wall and double wall bags are now available in many different styles and in innumerable sizes and shapes to suit almost every package requirement. Printing has also progressed and transparent cellulose bags may now be printed by letterpress, aniline or gravure, in from one to six colors, using type set-ups, zincs, halftones or full color process plates, effects being obtainable that favorably compare with printing on paper or metal containers.

Acknowledgment is made to John M. Cowan, The Dobeckmun Co., and T. W. Koch, Shellmar Products Co., for aid in the preparation of this article.

Visibility still remains the principal reason for packaging in transparent cellulose bags, although in many instances where such containers are adopted this sales-quickening virtue of perfect transparency may or may not be one of many extremely powerful incentives prompting their use. It is safe to say that if a product possesses any sight appeal at all, transparent cellulose bags will increase its sales materially. In the first place, such visible packaging makes a strong appeal to the retail merchant, leading him to give it preferred space on counter, table or shelf. In the second place, the brilliance and flash of these units attract many more eyes than packages of more subdued, less striking appearance. This leads to many purchases on the impulse of the moment and a consequent upswing in total sales.

Protection now also ranks high as a motive for the use of transparent cellulose bags in packaging many products. In contrast to transparent cellulose wraps, or wraps of semi-opaque materials, such pre-formed containers afford tighter, sturdier packaging. Where extra strength is required, double wall bags are available; where such qualities as moisture-proofness, semi-moisture-proofness, airtightness, water-tightness, resistance to oil and grease penetration or other protective qualities are demanded in a container, custom bags made of special transparent films may be had.

Cross References: Printed Transparent Sheeting, page 166; Transparent Wrapping Sheeting, page 188; Paper Bags: Types and Uses, page 204; Bag Filling and Sealing, page 444; Bag Making Machinery, page 462.

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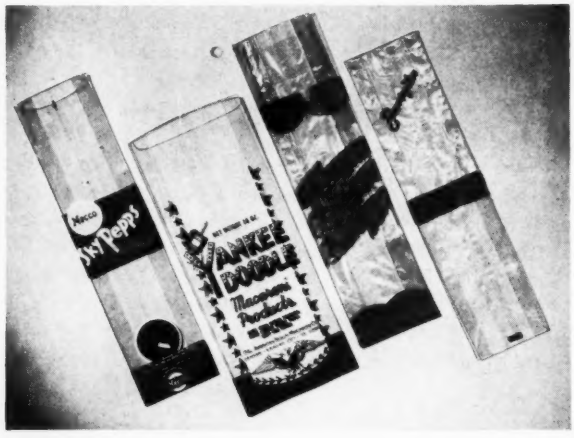

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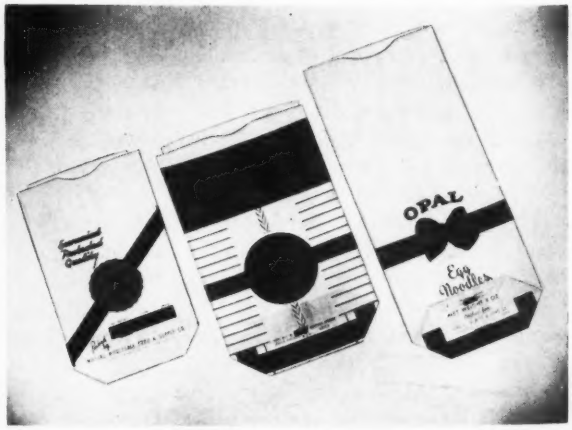
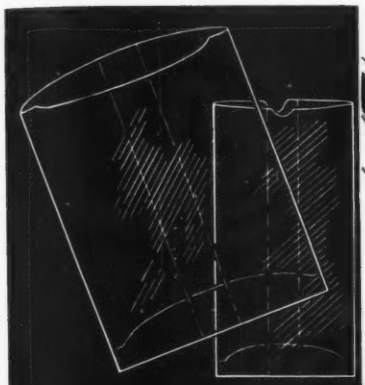
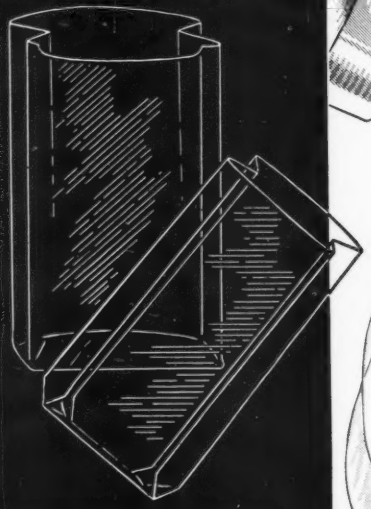


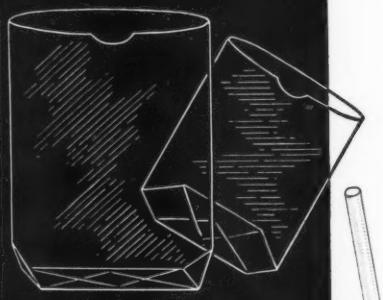
1. Square bags. When used for fragile products, these are usually printed at the bottom to hide unsightly crumbs and flaking. **2.** Flat bags or envelopes used for hosiery and other small textile items. Texture of the product as seen through the transparency forms an essential part of the design. **3.** Satchel bottom bags. Photos courtesy Shellmar Products Co.



FLAT STYLE BAGS, supplied with die cut lip, thumb notch or cut straight at top, without lip.



SQUARE STYLE BAGS, supplied with die cut lip or cut straight at top, in a large range of sizes.



SATCHEL BOTTOM BAGS, supplied cut straight at top or with thumb notch.

DUPLEX STYLE BAGS, using combinations of grades and weights of "Cellophane" to form double wall bags, are available.

from ROLLS *of*

Cellophane

TRADE MARK

THE DUPONT CELLULOSE FILM

come...

HUMITUBE

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CONTAINERS

As pioneer converters of "Cellophane," the Humitube Manufacturing Company is widely known as the centrally located source for a complete line of bags, envelopes, pouches, cigar tubes and transparent drinking straws.

Ready to serve you with stock size bags or with containers especially designed and printed to fit your specific packaging problem.

"HUMITUBE"— the original crimp sealed pouches, of which millions are used for complete cigar protection, are also economically taking hundreds of small items to market.

We invite inquiries. Write for samples, prices and information on plain or printed containers.

HUMITUBE MFG. CO.
(Converters of "Cellophane")
PEORIA, ILLINOIS

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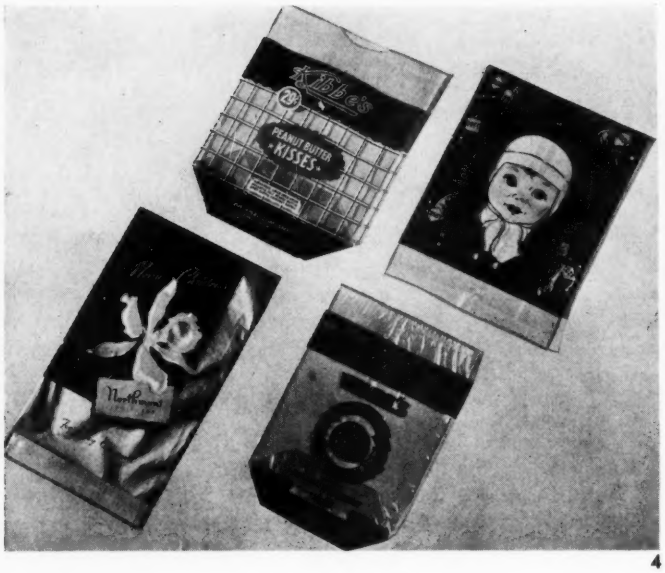

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4. Satchel bottom and flat bags showing a wide variety of design treatments. Photo courtesy The Dobeckmun Co. **5.** Flat envelopes for textile products. Photo courtesy Dennison Manufacturing Co.

Styles of Bags

Transparent cellulose bags are manufactured in three standard styles—satchel bottom, square and flat.

Satchel bottom bags are the most extensively used, this type finding its largest use in stock, unprinted sizes employed by retail stores for the "store packaging" of bulk items such as peas, beans, rice, nuts, sugar, spices, hard candies, tapioca, prunes, etc. When filled, satchel bottom bags have flat bottoms that permit upright display without support. In satchel bottom bags, also, the proportion of height to width provides a more attractive package than the same size square bags would.

Square bags enjoy the most diversified use due to the variations that can be had in their length, size of side tucks and face width. They are used to package all sorts of edible items, textile products, hardware, etc., etc.

Flat bags find their principal use in the packaging of light objects such as nuts, potato chips, etc., where "bulging" produces an illusion of larger quantity, and for hosiery, gloves, textiles, etc.

All three types may be secured in either single wall or double wall (duplex) construction. Duplex bags are used where extra protection against shipping or handling hazards is required or where the weight or bulk of the packaged commodity makes necessary greater container strength. Specific protection requirements are met by having the inside and outside walls of the bag made of different films.

In the past year, there have been many interesting developments in making transparent bags stronger, easier to load and more air-tight. Transparent bags can now be obtained that are completely sift-proof, even for very fine granular products. It is now possible to have transparent bags made in such a manner that they are watertight; this feature is of tremendous importance in packaging "wet" frozen foods like strawberries, etc.

Printing may be had on either the inside or outside of the bag walls. Printing on the inside of the film is known as "reverse printing" and is used when added brilliancy is an advantage and when there is no possibility of the printing inks affecting the packaged commodity. In the case of duplex bags, printing is usually done in "reverse" on the inside of the outer wall.

Bag Sizes

Transparent bags may be made up to order in virtually any size in widths from $1\frac{1}{2}$ in. to 14 in. and in lengths from 3 in. to $17\frac{3}{4}$ in.

Unprinted bags are available in stock sizes which are fairly well established throughout the industry. The numbers by which these bags are designated indicate their nominal capacity, but it is obvious that the capacity of the bag varies with the bulk of the product to be packed.

Satchel bottom bags are available in sizes designated as $\frac{1}{4}$-lb., $\frac{1}{2}$-lb. and 1-, 2-, 3-, 4- or 5-lb.

Square bags are available in all the above size designations and in a 6-lb. size. They may also be had in four special small sizes.

Flat bags are available in 1-oz., $\frac{1}{4}$-lb., $\frac{1}{2}$-lb., 1-lb. and 2-lb. sizes, as well as in a size designated as No. 1 Peanut and designed to hold 1 oz. of that commodity.

Specially printed stock size bags are usually available in minimum quantity orders of 10,000 or more of any one particular size.

THERMOSEAL *the* HEAT SEALING *Closure*

PATENT No. 1,983,291

Chosen by General Foods for their nationally distributed Jell-O Pudding Package liner. Why? THERMOSEAL heat sealing closure guards natural flavor—prevents sifting—eliminates slack filling—and increases moisture-vapor proofness of the Lamofilm Liner.

Benj C Betner Co

MAIN OFFICE, DEVON, PA.

DEVON, PA.; RICHMOND, VA.; OKLAHOMA CITY, OKLA.

MANUFACTURERS OF MODERN PAPER BAGS

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Metal Foil Bags: Types and Uses

The metal bag consists of a thin sheet of shiny, flexible aluminum metal laminated to paper (glassine, greaseproof, bond, cellulose, etc.) and formed into a bag. The metal surface is usually exposed and when printed in bright colors, results in a package having powerful eye-appeal on dealers' shelves.

Surpassing the eye-appeal value of the metal bag, however, is its remarkable protective properties. Foremost among these protective features is the fact that the metal bag excludes all light—light which otherwise might cause rancidity and spoilage. For example, such products as potato chips and salted nuts are especially sensitive to light, only a couple of hours' exposure being sufficient to cause a photo-chemical reaction to take place and this results in rancidity.

A second important feature of the metal bag is its high resistance to moisture transmission. In one reported test, metal bags of potato chips, after four hours' continued exposure to saturated atmospheric conditions (95–100 per cent R. H.) at 100 deg. F., showed only 0.99 per cent moisture absorption, against 18.70 per cent absorption by a non-metal bag under identical conditions. Metal bags are also reported to have extremely high resistance to insect infestation.

Metal bags are made in both the square type and flat type and both are available in the duplex style, that is, with an extra inner liner of glassine, parchment, greaseproof or other papers.

The bags are used either inside an outer paper carton or can, in which case they are unprinted, or used alone when they are printed in one, two or more colors.

1

Cross References: Decorative Foils, page 162; Protective Foils, page 180; Paper Bags: Types and Uses, page 204; Bag Closing and Sealing Methods, page 212; Merchandise Envelopes and Packets, page 218.

1. Printed foil bags. Larger bag is foil lined to provide background for product when opened. Courtesy Dennison Manufacturing Co. **2.** Metal foil bags and envelopes as used for beverage powders, potato chips, coffee and confections. Courtesy Reynolds Metals Co., Inc.

2

Brilliant Merchandisers at your Service

Sealtite-Sanitape

FOR PILLS · TABLETS · CAPSULES · POWDERS · CREAMS

GAINING the vital advantage of first-impression acceptance, unit-wrapped products follow through to complete satisfaction in use—Protection—Convenience—Ethical Appearance—Maintained Efficacy—these advantages of Sealtite-Sanitape Packaging—so appealing to both doctor and layman—are vital merchandising aids which have importantly affected the successful promotion of many fine products. Package variations are endless, both in size and materials used, ranging from sample folders of a single tablet to dispensing and standard sale units of varying dimensions and contents.

LET US SERVE AS YOUR PACKAGING DEPARTMENT—Sealtite-Sanitape Wrapping is available to manufacturers through our Contract Packaging Division. Here under the most modern conditions, including individual, air-conditioned rooms and Sterilamp purification, we receive your product in bulk, store, unit-wrap by Sealtite-Sanitape, pack in cartons, insert literature and hold or ship on your instructions. Thus you are relieved of endless detail, yet provide for your product a truly outstanding package.

Sealtite-Sanitape

THE UNIQUE PHARMACEUTICAL PACKAGING SERVICE WHICH IS

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Bag Closing and Sealing Methods

A bag, like a bottle, has but a single opening. If its walls are sufficiently strong for the intended purpose and its seams are sufficiently tight, it will afford adequate protection to the product, subject only to one consideration —namely, the effectiveness of its seal. If the seal is weak, it will not matter whether or not the bag was strong. If the seal is difficult to open, the consumer will find little satisfaction in the other good points of the bag. If the seal is difficult to re-close and the product is one which is not consumed in a single serving, consumer dissatisfaction can well be anticipated.

Because the bag closure is so vital to the proper functioning of the bag as a container, bag manufacturers, machinery manufacturers and packagers have worked hand in hand to develop closures which would solve the difficult problems confronting various packagers. Ingenious structures are today available providing closures fully adequate to meet virtually every problem. High-speed machinery is available to form and apply these bag closures.

Bag construction, materials and equipment will vary in almost every separate case which might be considered. It is, therefore, our purpose in the paragraphs which follow to present only a brief outline of some of the more widely used seals or closures employed on the modern retail or consumer sizes of bags.

It can be assumed in reference to each type of seal that maximum packaging economy, as well as standardized effect, is possible only through the use of the equipment which in almost every case has been developed concurrently with the introduction of the seal, or later as a means of adapting it to modern production requirements.

Acknowledgment is made to E. G. Kuhn of the Consolidated Packaging Machinery Corp. for aid in the preparation of the data upon which this article is based.

The Allison closure: Seals contents with a triple fold which is further reinforced by a strip of gummed tape. Folds are pressed firmly against contents while tape is rolled down bag sides. Good protection for product and easy stacking.

The Betner seal: Employs a tin tie strip which is attached in an exposed position to the bag top by a machine which completes the regular over and over fold and folds in a metal tie.

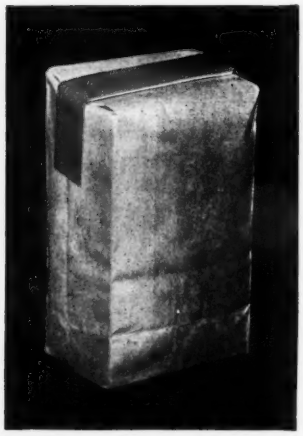
The Delta seal: Folds bag top to produce oblique overimposed folds and in manner which when cut according to instruction produces a pouring spout for contents. The top of the bag when sealed presents a flat surface well adapted for stacking.

The Sealtite closure: A simple and extremely practical over and over fold which produces a compact, flat topped package with excellent merchandising appeal. Adaptable for intuck or gusseted bags of either paper, cellophane or foil, a tight, sift-proof closure is claimed.

The Seal-Tie closure: A modified use of the metal strip here preserves the re-sealing advantages, but confines the use of this feature to the secondary closing of the bag. The primary seal consists of an over and over fold securely pasted flat against top. A compact package with good display value.

The square top or flat closure: (Also known as

Cross References: Paper Bags: Types and Uses, page 204; Transparent Cellulose Bags, page 206; Metal Foil Bags: Types and Uses, page 210; Merchandise Envelopes and Packets, page 218; Heavy Duty Multiwall Paper Bags, page 222; Cotton and Burlap Bags, page 226; Bags: Special Types, page 228; Bag Filling and Sealing, page 444; Box and Bag Stapling Equipment, page 446; Types and Functions of Adhesives, page 474.



1. Allison closure.

2. Tin Tie closure.

3. Deltaseal closure.

From this

Comes this

Design is only half the answer to your packaging problem. Of equal importance to the success of the product is the package itself. Constant research on papers, paper coatings, Cellophane, Pliofilm, and other material factors enables us to *know* the perfect package for your use.

Continual scientific laboratory tests are absolute assurance that any Royal package is the right one for the purpose intended.

If you have any question regarding your package in relation to your product, let us help you, both in research and design.

Write for further information

THOMAS M ROYAL & COMPANY

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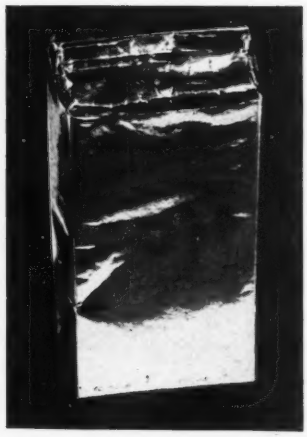
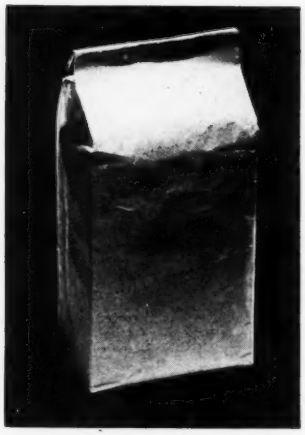
4. Sealtite closure.

5. Square top or flat closure.



6. Hesser closure, foil bag.



7. Wire staple closure.

8. Metal clip closure.

the Hesser), uses a card which is placed inside the bag in most cases. The bag top is folded down and sealed by gluing with a top label (not gummed) glued on in addition. This type may be varied in at least two ways. For easy sifting products like sugar, the gluing is done in a different way and sometimes the top label is left off. Then the outer wrapper is die-cut, folded and glued top and bottom in a manner suggesting a band label which extends around the face of the bag.

The Tin Tie closure: Supplements standard bag construction with a paper covered strip of metal, which patented feature is licensed to various bag manufacturers on a royalty basis. Offers excellent re-sealing advantages at some sacrifice of absolute protection of contents. Wide variation of finished package effects obtainable. Automatic machines have now been developed for applying this closure.

The wire staple: An economical and, in certain instances, an entirely acceptable closure for both paper and cellophane bags. Classified as tamper-proof, although offering little resistance to moisture.

The Bagpak cushion stitch closure: Used only on paper bags, especially of the multiwall type. This requires a machine to apply and, in combination with a machine sewed snake stitch, this closure is stronger than the walls of the bag.

Each type of seal illustrated and described has certain advantages which should be taken into careful consideration not so much on the basis of general merit, but rather from the standpoint of meeting the particular requirements presented by the product itself, the market it serves, competitive packaging and similar vital factors.

Heat-Sealing Materials

The increasing use of bags formed of transparent cellulose or acetate sheeting, rubber hydrochloride sheeting and similar heat-sealing films has brought about a rapid development of heat-sealing closures and methods of applying the same. The simplest of the heat-sealed bags is the pillow type formed from a tube of transparent sheet and crimped at either end between hot plates to achieve a seam. Transparent bags are also made in the flat, square and satchel bottom shapes and all may be heat-sealed for closure. Two general types of heat-sealing equipment are available. One locks the bag ends between heated jaws. The second heat-sealing unit passes the bag through one or more pair of heated rollers to achieve the same effect.

Heat-sealing may also be applied to waxed papers, waxed paper bags, waxed glassine bags or bags treated with thermoplastic adhesive.

Methods of Bag Closing

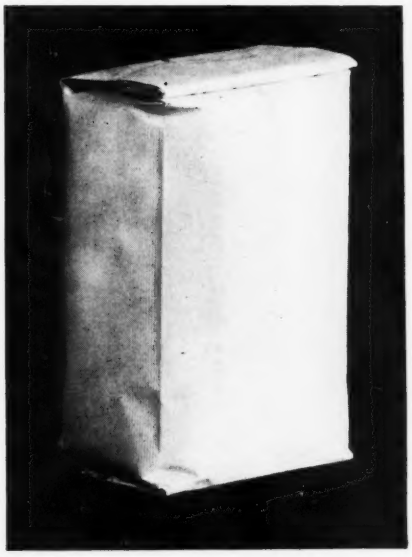
With the exception of the stapled bag—and this too may be closed by automatic instead of hand equipment—all of the closures shown require machine units for sealing. Such units for folding and sealing are usually integral with or included as a part of the weighing equipment customarily used.

In the closing of the larger size bags, there is a definite advantage, provided, of course, that production condi-

find out about the leakproof "Super-Seal" the colorful "Rainbow" and the many other Munson styled bags . . .

THE MUNSON BAG COMPANY

1384 WEST 117TH STREET CLEVELAND, OHIO.



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9. Square bag, filled and closed with automatic machine. Pasted closure. **10.** Satchel bottom bag, closed by tying. Photos courtesy of the Consolidated Packaging Machinery Corp.

tions are equal, in machine versus hand closing of bags. According to actual figures, obtained at one plant where both operations were used, the cost of machine sewing is approximately one-third that of hand sewing.

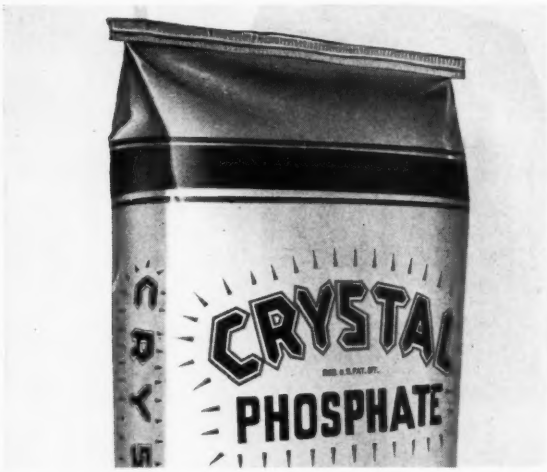
In general, the consideration of bag closures is of equal importance with that of the material from which the bags are made and their construction. It is essential, then, that manufacturers of bag closures and machines for forming them be freely consulted.

Comparative Checking Points

Bags, as used by manufacturers and shipped sealed from the factory, must be judged by much more severe standards than would be applied to the ordinary bag used by the retailer or to the manufacturer-shipped bag carrying a single unit of merchandise. When powdered or granular material is bag packed, the closure becomes the all-important point and each of the many closures discussed on this and the preceding pages is especially suited to certain uses.

In considering closed bags of these types, the following may be taken as checking points: 1. Secure closure; 2. recloseability; 3. sift-proofness; 4. convenience in stacking; 5. convenience in packing; 6. cost of necessary equipment.

Checking against these points, one type of closure may be indicated in one instance and another logically chosen for a different product and different marketing or manufacturing conditions. Additional checking points, related perhaps more to the bag, but dependent in part upon the choice of closure, are: 1. Ability to take and hold a permanent shape; 2. ability to accept printing on all sides of the bag; 3. ability to accept and maintain an attractive design, both for store display and in the consumer's hands.



11. The Bagpak cushion stitch closure. The closure is made with an automatic machine equipped with a sewing unit which lays a thick, compressible, kraft cord across the end of the bag and stitches —a "snake" or cross stitch—around it without going through it. This reinforcing cord forms a cushion or shock absorber that takes up the strains due to handling or dropping the bag, naturally preventing the stitching from pulling through the bag walls.

BAGS FOR

BEDS

BUNS

BEANS

BON-BONS

BEVERAGES

BABIES

FROM A RECENT NEWSPAPER CLIPPING: "This infant, who was really left holding the bag at birth, is shown as he was found abandoned in a paper bag in Brooklyn.

EVEN though Equitable's list of different paper bags reads like a dictionary, "bags for babies" is a new one on us! But we're not surprised. Designing new bags (and constantly revising and improving old ones) is an important part of Equitable's daily work. Our Research Division and Art Staff work hand in hand (without charge to you). And to back them up, Equitable's combination of Paper Mill and Bag Manufacturing Plant under the same management, assures you of *uniform quality, speedy service, and consistently low price*. Write to us for samples and estimates—today!

EQUITABLE PAPER BAG CO., INC.

47-00 31st Place, Long Island City, N. Y. • Paper Mill: Orange, Texas

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Merchandise Envelopes and Packets

Envelopes and packets are rightly considered as important packaging materials because: (1) there are many products which can only effectively and economically be packaged in them; and (2) special uses for certain products demand their use, such as the following:

1. Individual portions, such as hot chocolate powder for soda fountain and restaurant service.
2. Small units—such as small parcels of seeds or certain drug products, such as five aspirin tablets.
3. Small quantities of powdery substances which must be completely enclosed to prevent sifting.
4. Flat objects of light weight, such as hosiery, gloves, collars, embroideries, etc.
5. As a suitable container for a sample for general distribution, such as an anti-acid powder.
6. Furnished by a manufacturer, as a means of safeguarding the identity of his product all through the distribution process, to retailers who buy in bulk or large unit packages, and dispense in small units to ultimate consumers.

In general usage, the term "packet" applies particularly to envelopes or enclosures which contain flower and vegetable seeds and are beautifully lithographed in color with true-to-type reproductions. All other flat type containers come under the general classification of *merchandise envelopes.*

In size they vary from the tiny $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in. center seam envelope, used for two or three pills, up to the $6\frac{1}{2}$ in. by $9\frac{1}{2}$ in. or $7\frac{1}{2}$ in. by $10\frac{1}{2}$ in. general utility envelopes, accommodating one or more pairs of hose. There are practically no limitations as to styles of papers used in making them, as to color, finish, weight and texture, as well as whether they are transparent, semi-transparent or completely opaque. They may be had both in open end and open side styles, either with or without flaps, depending on the product to be packaged. And as to surface decoration they are capable of receiving any type of printing or lithography, in any color or combination.

A patented type of packet has been used for a number of years for packaging pharmaceutical products such as

Cross References: Transparent Cellulose Bags, page 205; Metal Foil Bags: Types and Uses, page 210; Bags: Special Types, page 228; Merchandising and Informative Tags, page 311.

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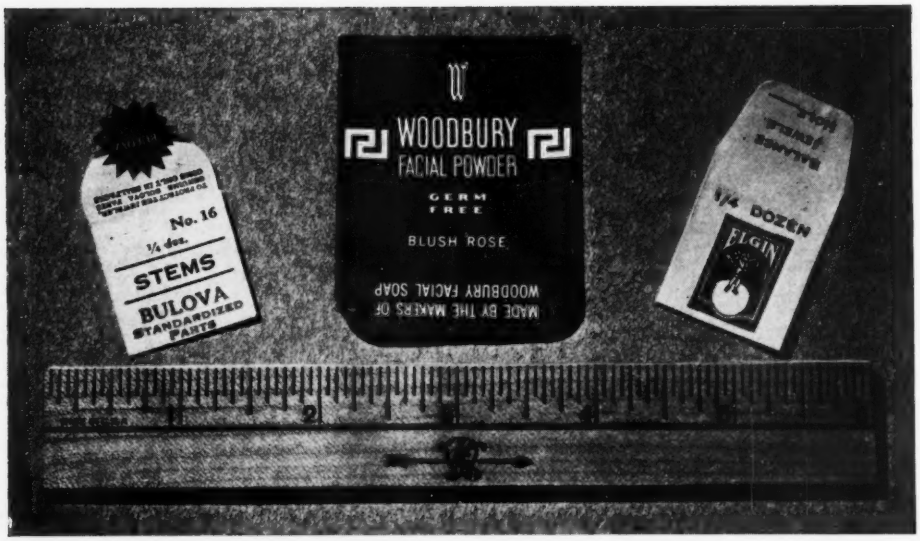

1. Glassine packets for a variety of products. Courtesy the American Paper Goods Co. **2.** Miniature envelopes for watch parts and powder samples. Scale may be judged by comparison with roller. Photo courtesy Dennison Manufacturing Co.

WHAT IS THE BAGPAK METHOD?
IT'S A COMBINATION OF TOUGH STRONG MULTIWALL PAPER BAGS AND MODERN EFFICIENT PACKAGING EQUIPMENT..

". . . You see, Bagpak* offers a complete, money-saving packaging service . . . for Bagpak paper bags lower your *package cost* and Bagpaker Machines decrease your *packaging costs;* resulting in a lower net cost per ton of product packed."

Mechanically perfected Bagpaker Machines speedily and economically weigh, fill, close and seal your material in the bag; or perform any part of the packaging cycle desired. For instance, if you already have weighing and filling equipment which you wish to continue to use, then there is a Bagpaker available to complete the cycle and automatically close and seal the bags. This wide choice of equipment now makes the Bagpak Method equally available to the small as well as the large shipper.

* Trade Mark reg. U. S. Pat. Off.

BAGPAK INC

"ONE MAN PACKAGE . . . . . EASY TO HANDLE"

220 EAST 42nd STREET • NEW YORK CITY

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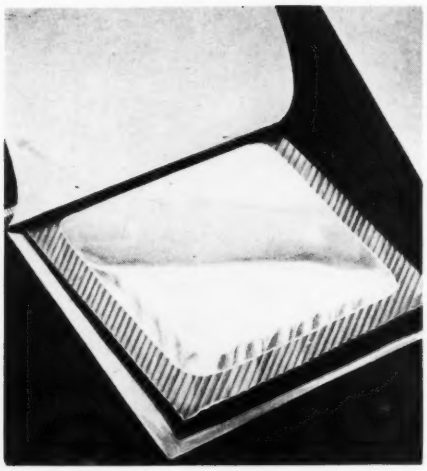
4

3. Tapered edge paper packet for irregular shaped product. Courtesy The American Paper Goods Co. **4.** Merchandise envelopes of the type widely used for textiles, patterns and small items commonly sold through novelty, notion and variety stores. Courtesy Dennison Manufacturing Co. **5.** Unit powder package holding a portion of powder between two films of transparent sheet material. Transparent films are fed from the roll to the powder filling machine which automatically inserts the powder, heat-seals the film into a packet form and applies a paper over-label. The result is a sift-proof container. Photo courtesy The Ivers-Lee Co.



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vitamin capsules, aspirins, etc., as well as cocoa, coffee, face powder, etc. Paper, cellophane, rubber hydrochloride, metal foil and various other thermoplastic resin coated materials are utilized. The packaging material and the product are placed in an automatic machine which produces a complete packaged unit, containing one or more tablets or a measured quantity of granular or powdered material, heat-sealed within a segment of cellophane or other sheet.

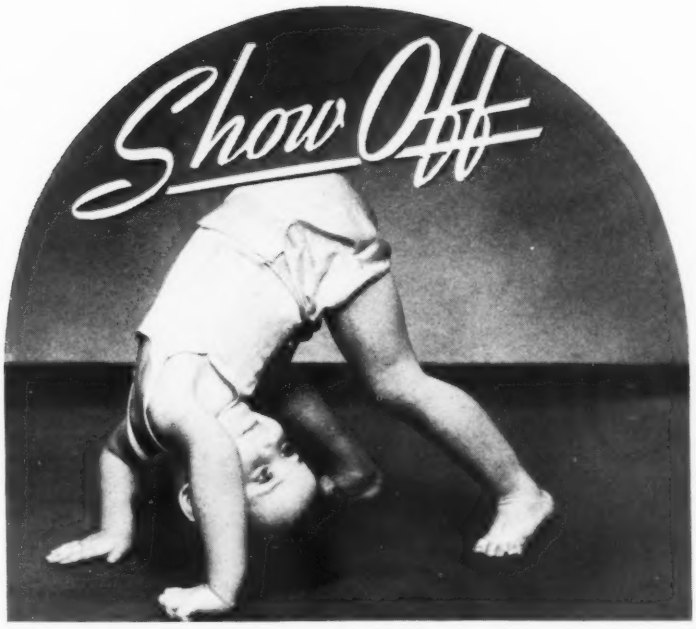
Another type, likewise patented, utilizes two opposed films of material, heat-sealed completely around tablets, pills, capsules or similarly shaped products. It may be produced in lengths two units wide and up to as many as 14 units long. It is particularly applicable to products extremely sensitive to atmospheric changes, such as effervescent and dehydrated compounds, some types of pharmaceuticals, etc.

Both types are nicked for convenience in opening and thus a single dose or portion may be detached, without reducing the protection afforded the remaining units.

A similar type of package is likewise available for powders, crystals and granules. The machines producing these packages are installed in packaging plants when production is large enough to justify such installation. In many instances, it is found preferable to ship the product to the machine maker's contract packing department and then to re-ship either directly to consumers or distributors or back to the original source for packing into sales containers.

A newly developed variation of the heat-sealed packet is produced by feeding two continuous strips of rubber hydrochloride-lined foil into a high-speed machine that automatically inserts the tablets between the strips, heat-seals it into its own envelope, then cuts the packet apart and affixes labels.

Several devices of both semi-automatic and automatic types are available for the production of packets of transparent cellulose or other heat-sealing materials for candies, doughnuts and a host of other small items. These machines apply a longitudinal seam to the cellophane sheet, as it comes from the roll, to form a tube and then heat-seal both ends of segments any desired length to form a complete sealed package. Various means are used to insert the product prior to the sealing of the second end of the container.



CELLULOSE WINDOW ENVELOPES

Special designs to give product visibility and still maintain complete protection.

It's good business for a manufacturer to show off his products to best advantage.

For fifty years we have been making packaging envelopes that merchandise many kinds of products. Experience has taught us which type of envelope container is best suited to your needs. We can give you something which is not only made better, but which looks better.

SAMPLE ENVELOPES

Ideal for sampling of cosmetics, food powders, seeds, etc.

PACKAGING ENVELOPES

THAT SHOW OFF THE PRODUCT

GLASSINE ENVELOPES

Especially suitable for oily or greasy products, such as chocolate, confections, nuts, grated cheese, ice cream powders, etc.

MERCHANDISE ENVELOPES

Designed to give maximum sales appeal to your product. Less expensive than boxes or cartons; more attractive than cheap wrapping. Styles suitable for food and drug products, light weight flat objects, such as clothing, notions, hardware, piston rings, etc., etc.

PROTECTIVE ENVELOPES

Positive protection from moisture, air, dust or leakage to prevent waste and spoilage. Powder tight and sift proof. Metal foil-lined, greaseproof-lined, etc., to suit specific requirements of your product.

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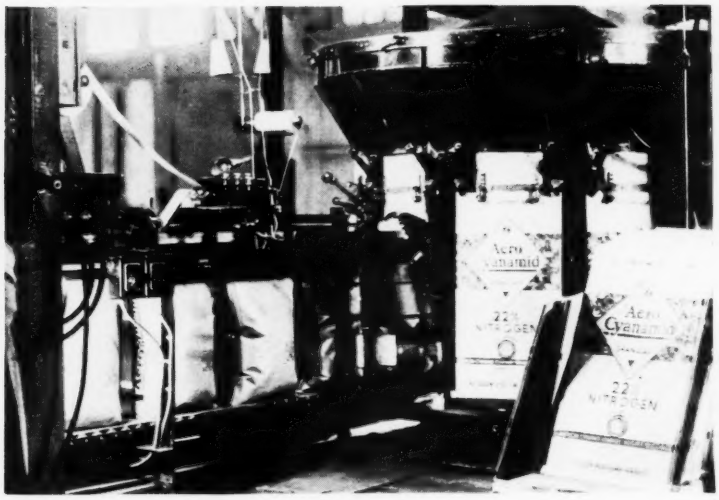

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1. Full cycle bag packing machine in plant of North American Cyanamid Co. Intake end, showing empty bags attached to filling spouts. **2.** Discharge end of same unit, showing completed package coming from the packer. Photos courtesy International Paper Products Corp.

Heavy Duty Multiwall Paper Bags

United States industry now uses over six hundred million heavy duty multiwall paper bags annually, carrying all types of commodities. Materials ranging in value from a few cents per pound up to 80 cents per pound are shipped in these bags daily over the common carriers. These materials range from comparatively inexpensive crushed and pulverized rock products to fine delicate foodstuffs needing the utmost in package protection.

Shipping Weights

The principal shipping weight in these bags is 100 lbs. of commodity, although many shippers are finding this type of container to be ideally suited, from both the economic as well as the utilitarian standpoint, for units ranging in weight from as low as 20 lbs. up to 140 lbs.

Construction of Bags

Heavy duty multiwall paper bags are constructed of from three to six walls of kraft paper, depending upon the weight, density and physical characteristics of the product they are intended to carry. Each ply or wall of paper is properly arranged and fabricated in tubular form, one within the other, so that each bears its share of the burden. Greater flexibility and strength are obtained by using a multiple number of walls in relatively light basis weights rather than a few walls of heavier paper. For this reason, the average heavy duty multiwall paper bag is constructed of a number of sheets, ranging in basis weight from 40 to 70 lbs. each—the most frequently used paper being sheets in the 40- and 50-lb. basis weights.

Types of Multiwall Bags

There are two types of these containers in general use. These are the valve bag and the open-mouth bag. The valve bag is factory-closed. That is, it has been closed at both top and bottom at the point of manufacture. The closure is made by either pasting or sewing. A small opening called the "valve" is left at an upper corner and the bag is filled in the shipper's plant by means of special packing machines which force the material into the bag under pressure. When filled, the internal pressure of the commodity forces a flap of the bag material across the opening, thereby effecting closure and the bag is ready for shipment. This is a fine container for certain pulverized materials.

The open-mouth bag is factory-closed at the bottom only and, like the valve bag, this closure is made by either pasting or sewing. The top of the bag is left

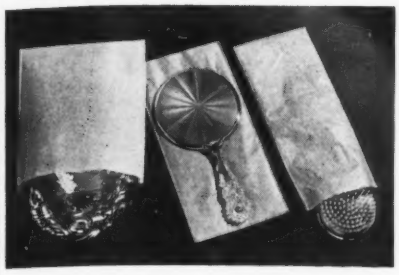
Cross References: Bag Closing and Sealing Methods, page 212; Weighing and Filling Dry Products, page 381; Bag Filling and Sealing, page 444; Box and Bag Stapling Equipment, page 446; Bag Making Machinery, page 462; Shipping Methods and Considerations, page 512.

Acknowledgment is made to W. Edward Scott of the International Paper Products Corp. for aid in the preparation of data for this article.

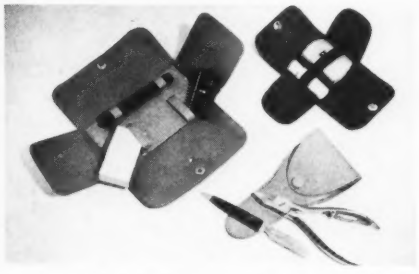
COTTONLUXE

FOR SEWN CONTAINERS

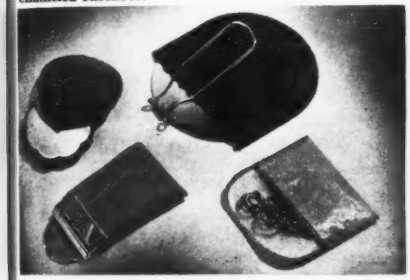
COTTON-LINED ENVELOPES • FLANNEL BAGS • LEATHERETTE CASES



1. Our non-tarnishing cotton-lined paper bags give complete protection to Silverware, Dresser Sets and similar articles with highly polished or enameled surfaces.

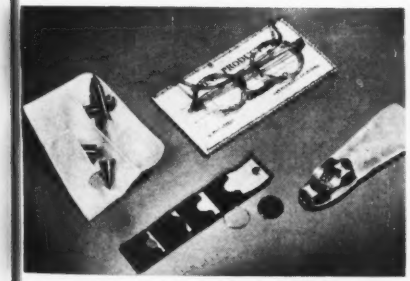


5. Attractive leatherette cases like those pictured above are almost a necessity in packaging articles such as Razors and Manicure Implements.



2. Metal Novelties—Vanity Cases, Jewelry, Mirrors, etc.—have added sales appeal when marketed in these non-tarnishing flannel and cotton-lined paper bags and envelopes.

6. A new high in the packaging of Fine China—each piece in its own kimpak-wadding-lined paper bag, with instructions printed on the back on how to care for china.



3. Flannel, cotton-lined paper and leatherette containers lend an air of value to Air Brushes, Eye-Glass Frames, Photographic Filters and Range Finders.

7. An impregnated Cleaning Cloth and a Folding Electric Iron—two worthy traveling companions in their suede leatherette containers with snap and slide fasteners.

SEWN CONTAINERS are often the solution of troublesome packaging problems. When you want to dress up your product, furnish a protective covering, or supply a case to hold compactly one or more separate units which make up an item, a sewn container is your answer. Glance at the illustrations on this page and read the brief descriptions. They may give you some idea of the wide possibilities of COTTONLUXE CONTAINERS.

Write for samples—Tell us your problem—Let us try to design a SEWN CONTAINER that will help to sell your product.

4. Dressed up in flannel bags with drawstrings and snap fastener, this Fishing Reel and Pipe are going places.

Cottonluxe
Manufacturing Co.

593 EAST 137th ST.
NEW YORK • N. Y.

XUM

open, ready to receive its contents at the filling station in the shipper's plant. The top closure, after filling, is generally effected by sewing, using machines especially designed for sewing paper bags or, in the case of less expensive commodities where sifting is not a factor, by manually tying the tops with either wire or twine. By reason of its large open mouth, which permits easy filling, this type of bag enjoys very wide use as a bulk shipping container for hundreds of commodities of practically all types and physical characteristics, ranging from those mentioned in the preceding paragraph to coarse and even non-free-flowing materials.

Moisture Protection

This is a major consideration when developing a bag for certain hygroscopic products. Kraft bag paper is, in itself, resistant to water and moisture to a considerable extent. These bags will shed water as contrasted with the absorbent action of the textile container. Therefore, the contents are safe if not exposed too long. Atmospheric moisture-vapor is another matter, however, as it will penetrate the tightest sheet of untreated paper. To guard against this, one or more walls of a number of different moisture resistant sheets are incorporated in the bag construction, resulting in a highly moisture resistant container.

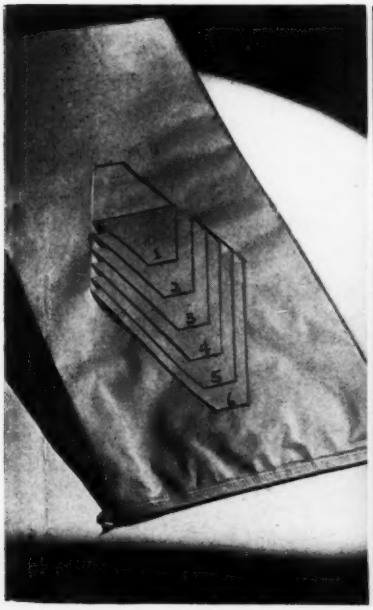
Unusual Uses

The heavy duty multiwall paper bag is used ordinarily as a bulk shipping container for those commodities that are dry, powdered or granular in character and which can be mechanically flowed or spout-poured into the container. However, a few years ago witnessed the beginning of their use as bulk shipping containers for materials having post-hardening characteristics, such as rosin and certain asphalts which are poured into the bag in a liquid state at astonishingly high temperatures, without damage to the bag. When cooling and subsequent hardening takes place, the bag in effect is a tightly wrapped package. The advantage of this type of bag for these materials is at once self-evident. They are easier to handle than barrels, require less space to store a given amount of commodity and have a tare weight of 1 per cent as against a tare weight of over 20 per cent in the case of barrels, resulting in an approximate 19 per cent saving in freight.

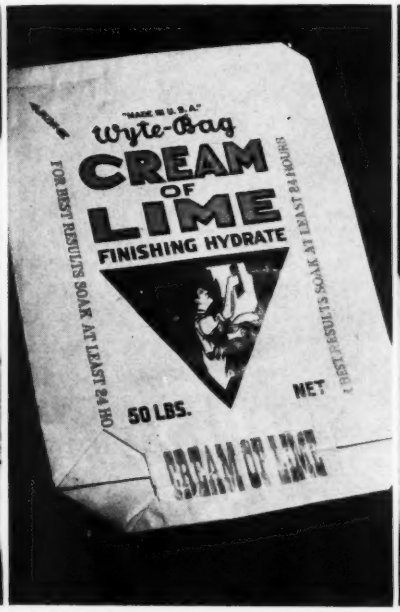
Packing Practice

The use of new and improved packaging machinery has played no small part in the rapid development of these containers. Valve bags are packed on special types of automatic packers. Open-mouth bags are packed on machines which automatically weigh, fill, close and seal the material into the bags. There are also several machines that will perform any part of this packaging cycle. For instance, if the shipper already has weighing and filling equipment which he wishes to continue to use, then there is a packer available to complete the cycle that will automatically close and seal the bags. This wide choice of equipment and different combinations of packaging machinery now make the heavy duty multiwall paper bag equally available to the small, as well as the large shipper.

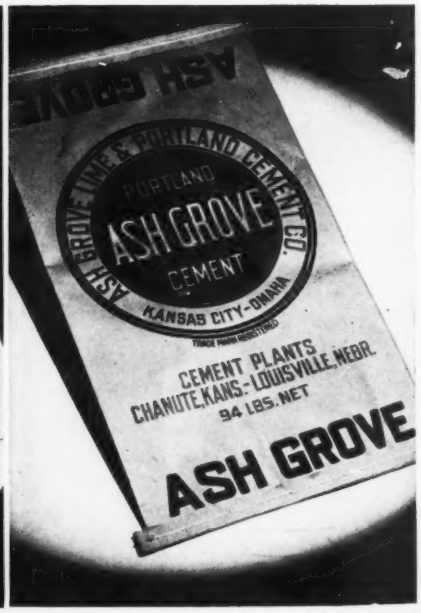
3. Six-ply multiwall bag.



4. Pasted valve bag.



5. Sewn valve bag.



Pile up Profits with MODERN PAPER PACKAGING

WHATEVER your product happens to be - - - -

COFFEE or VEGETABLES or COAL or CANDY

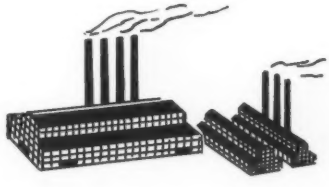
or TOBACCO or ICE CUBES or FLOUR or SOAP

or BEER or DOG FOOD or BABY PANTS or

AUTOMOTIVE PARTS or GADGETS or almost anything

else you can think of - - - - -

UNION

is ready to design and manufacture 

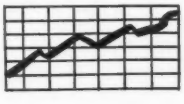
the paper package best suited to fit YOUR NEEDS.

WHY a paper package for your product ? Because, IT'S ECONOMICAL

ATTRACTIVE CONVENIENT. IT HAS DISPLAY VALUE

IT IDENTIFIES YOUR PRODUCT IT PROTECTS YOUR PRODUCT

AND THE CONSUMER LIKES IT ALL OF WHICH MEANS

ADDITIONAL SALES  AND PROFITS FOR YOU.

UNION BAG AND PAPER CORPORATION

WOOLWORTH BUILDING • NEW YORK

Paper Mills at: SAVANNAH • GA. HUDSON FALLS • N. Y.

Bag Factories at: HUDSON FALLS • N. Y. LOS ANGELES • CAL. CHICAGO • ILL. SAVANNAH • GA.

XUM

Cotton and Burlap Bags

Textile bags, as the name implies, are made from woven fabrics of various kinds. There are four important types in common use.

1. Cotton bags: Many different styles of goods are used in making cotton bags, special constructions being designed to serve particular or unusual purposes.

Open-mesh cotton bags are widely used for shipping cabbages, onions, potatoes, oranges and many other vegetables and fruits. They provide an extremely compact form of shipment and permit full utilization of valuable space in refrigerator cars and storage warehouses. They permit examination of the product and provide for air circulation—a feature definitely desired in the case of certain fruit and vegetable items.

2. Burlap bags: Jute, from which burlap bags are made, is a product of India. Burlap goods are made in India for the most part, although limited quantities of European-made goods are available. Many different widths and weights of goods are used in making bags. The common widths of burlap run from 32 in. to 45 in. and the common weights from 7 oz. to 12 oz. Besides this, there are many special constructions designed for particular purposes. Burlap, being imported from India, necessitates an anticipation of supplies at least six months in advance. Burlap bags, because of their strength and low cost, are widely used for bulk products.

A new form of textile tubing, designed as a protective wrap for rectangular and cylindrical shipments, has recently been developed. The tubing is made of burlap and designed to replace burlap piece goods as a wrapping. Hand sewing, such as required when ordinary burlap piece goods are used, is entirely eliminated, the tubing being fitted over the top of the package, fastened at the bottom with a wire tie, pulled up on the sides to take up the slack, fastened with a wire tie at the top and then cut from the roll just above the upper wire tie.

3. Laminated bags: These bags are made from either cotton or burlap goods and have a paper lining which is attached to the cloth by an adhesive. Any of the various constructions of goods used in making cotton and burlap bags may be employed in making laminated bags. The bags may have one or more plies of paper lining. The lining is attached by special adhesives. These adhesives may be of such characteristics as to make the bag water-proof or to give it some other quality which may be required. Laminated bags are used extensively as shipping containers for chemicals and food products.

4. Paper fabric bags: These bags are a comparatively new development. They are made from strips of tough paper, spun into yarn and woven into open-mesh cloth. Many brilliant colors of goods are available. Paper fabric bags are used principally as containers for fresh fruits and vegetables.

Textile bags have certain characteristics which make them economical and practical containers in given situations. They are light in weight and thus easy to handle. The tare weight of textile bags is frequently 80 per cent less than that of wooden containers of equivalent capacity. Thus freight savings may be 8 or 9 per cent more when bags are used. Textile bags require little storage space. Five hundred bags, when baled, occupy a space of a single full sized wooden barrel.

Textile bags can be printed with attractive multi-color brands, formulae, instructions, etc. New inks have been developed for flour bags which permit the ultimate consumer to wash out all or part of the design and thus to salvage the bag for re-use as fabric.

Cross References: Paper Bags: Types and Uses, page 204; Bag Closing and Sealing Methods, page 212; Heavy Duty Multiwall Paper Bags, page 222; Bags: Special Types, page 228; Weighing and Filling Dry Products, page 381; Bag Filling and Sealing, page 444; Box and Bag Stapling Equipment, page 446; Printing Inks for Packages, page 496; Shipping Methods and Considerations, page 512.

1

2

1. Laminated (textile with paper linings) bags for powdered products. **2.** Cotton fabric bag lined with specially coated vegetable parchment as container for preground hamburg steak.

The BLACK HAND WILL ROB YOU of Sales and Profits

Cupples-Hesse bags are made of

Cellophane
TRADE MARK
THE DUPONT CELLULOSE FILM

No one knows better than the man behind the counter how quickly black dirty hands soil unprotected merchandise.

Cellophane Bags guard the freshness of your product from plant to purchaser. It keeps them sanitary, free from dust and germs, yet its crystal clear visibility insures eye appeal sales.

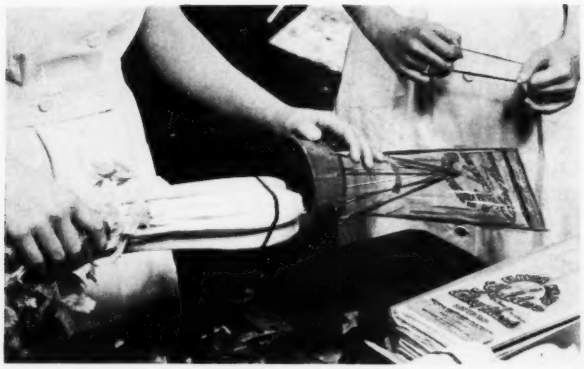
Cupples Hesse packaging engineers are ready, willing, and able to solve your problems on printed or plain Cellophane bags and wraps.

Cupples Hesse ENVELOPE AND LITHO. CO.

4169 N. KINGSHIGHWAY ~ ~ ~ ~ ST. LOUIS, MO.

OTHER CUPPLES-HESSE PRODUCTS ARE

WAXED GLASSINE BAGS TAGS FOOD CUPS ENVELOPES LETTER-HEADS



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1. Rubber hydrochloride sheet bag used to protect and preserve celery. Photo courtesy Goodyear Tire & Rubber Co. **2.** Die-cut window envelope for dress length of material. **3.** Glassine envelopes—semi-transparent—protect the product and aid in its identification. **4.** Transparent window envelopes in which the product forms an essential part of the package design. Photos courtesy Dennison Manufacturing Co.

Bags—Special Types

In the previous articles in this section, the uses of bags and the principal general types have been discussed at some length. There remain, however, a number of special types of bags—some of which are developing rapidly into important classifications—which require illustration and discussion.

Liquid-Holding Bags

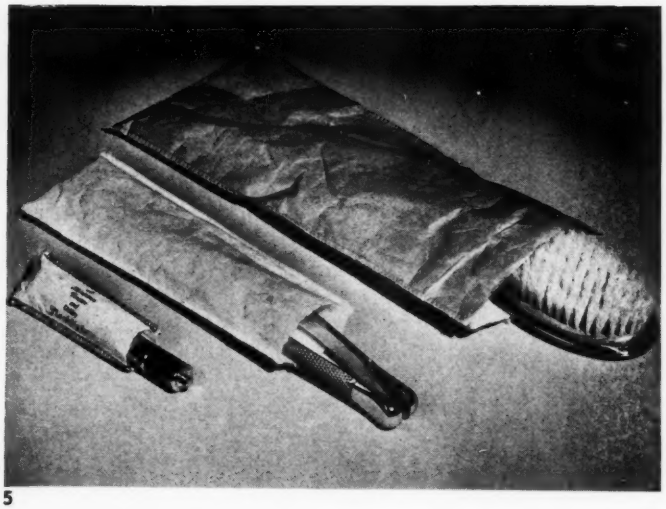
A number of containers are already on the market in which rubber derivative sheeting in bag form is used for the retention and preservation of liquids, solids in brine or semi-liquid products. A great deal of research and experimentation along these lines is being conducted and the field will undoubtedly see further expansion in the near future.

Moisture-Excluding Bags and Packets

A wide range of materials have long been used to exclude moisture from dry products or to retain moisture against a tendency to evaporate into the outside air through the package walls. Recent improvements in packaging techniques, however, particularly the development of easily worked heat-sealing materials and the necessary equipment for working these—have led to numerous improvements in this field. Foils, in combination with rubber hydrochloride, are used to form heat-sealing packets for individual tablets of medicinal products and for similar purposes. Lacquer coated glassines are finding increasing application as bags for hygroscopic products where the combination of a moisture resistant film and a heat-sealed seam provides a high protective container. Impregnated papers are also used—particularly in the hardware industry—to protect items, which are subject to rusting, from atmospheric moisture.

Cross References: Protective Materials—General Considerations, page 177; Protective Foils, page 180; Protective Glassine Papers, page 184; Transparent Wrapping Sheeting, page 188; Tarnish Resistant Papers, page 197; Resin Treated Papers, page 201; Paper Bags: Types and Uses, page 204; Bag Filling and Sealing, page 444; Box and Bag Stapling Equipment, page 446; Bag Making Machinery, page 462.

IF
YOU PACK
ICE CREAM
HANDKERCHIEFS
CHEESE
NOODLES
COFFEE
RUBBER GLOVES
SPICES
POTATO CHIPS
CRACKERS
PIES
DOUGHNUTS
PISTON RINGS
LAXATIVES
POWDERED SOUP
NUTS
ASPIRIN
DYES
THROAT DISCS
or any of hundreds of other products:
American Paper Goods bags, envelopes and cups will pack it better.
Let Us Help You With Your Packaging Problems
The American Paper Goods Co.
KENSINGTON, CONN. - - - - CHICAGO, ILLINOIS



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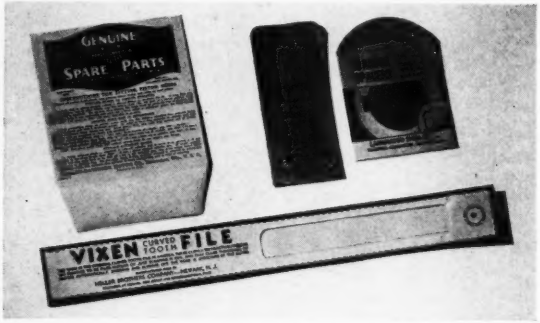

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5. Cotton-lined paper sewn into the form of protective bags. Photo courtesy Cottonluxe Manufacturing Co. **6.** Foil lined with rubber hydrochloride film, heat-sealed to form packet tablet. Courtesy Goodyear Tire & Rubber Co. **7.** Heavy duty envelopes for hardware machine parts, etc. Envelopes in upper right corner are impregnated for protection against atmospheric moisture. Courtesy Dennison Manufacturing Co. **8.** Lacquer coated glassine envelopes having heat-sealing and moisture-vapor resistant qualities for pop corn and highly hygroscopic products. Courtesy The Menasha Products Co.

Tarnish Protection

Anti-tarnish papers of various sorts—i.e., papers which are specially formulated to be sulphur-free—are increasingly being formed into bags to provide protection for individual tarnishable items. This tendency contrasts with the former major use of these materials in wrap form. The use of anti-tarnish bags provides a more permanent and neater protection and hence is desirable in many instances because it serves to make the products more readily identifiable and salable. Both to provide tarnish protection and to protect the delicate polished surfaces of mirrors, silverware and similar products, cotton-lined bags are frequently utilized. Here the cotton is first adhered to the bag paper and the paper is then worked into bag shape, usually with sewn edges.

Miniature Packets

For sampling purposes and for the protection of tiny items such as watch parts, miniature bags are frequently utilized. These are available in sizes as small as $^1/_2$ in. by $^1/_2$ in. and in a wide range of types.

Die-Cut Envelopes

For the display of products, such as dress lengths of fabric, die-cut bags and envelopes are frequently manufactured. Where it is necessary for the consumer to touch the product before buying, no film is used over the die-cut portion. The more general practice, however, is to utilize a die-cut window envelope with a transparent cellulose or acetate film forming the envelope.

Food Saver Bags

Rubber hydrochloride sheeting is used in a wide variety of ways to form protective bags for foods, fruits and vegetables. Frequently, these bags are branded and distributed as the original product package. Their reusability as refrigerator bags or for food preservation purposes in the home is, however, often emphasized by the sponsoring packagers as a plus feature.

Carton Liner Bags

Products marketed in either printed and sealed cartons, or tight wrapped cartons, are frequently inserted into bags which form the inner liner of these containers. Such bags prevent sifting and protect the product against atmospheric and moisture deterioration hazards. They are made of a variety of materials dependent upon the nature of the product being packed.

METAL CONTAINERS

Section Seven

Pages 231 to 254

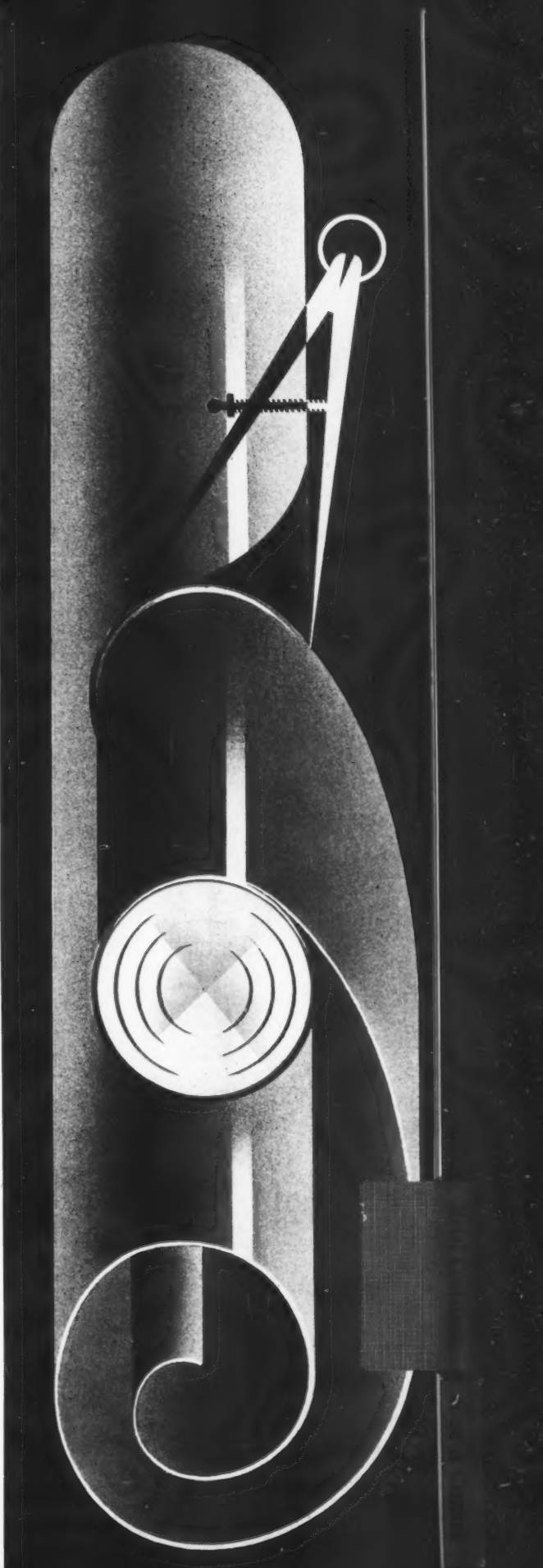
TIN PACKAGES AND CANS

CAN DECORATION PROCESSES

ALUMINUM CONTAINERS AND VIALS

SPECIALTY METAL CONTAINERS

COLLAPSIBLE METAL TUBES



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Tin Packages and Cans

Tin containers, or tin cans, as they are more popularly called, are not manufactured primarily from tin. This would not be practical, since pure tin is very expensive and too soft to make a sturdy package of the type you would want. Tin cans are made from a sheet of steel coated with a very thin film of tin which is applied to both sides of the steel sheet. The tin coating is necessary because the steel alone would rust not only from the moisture in the air, but also possibly from a chemical reaction set up by the contents of the container. Steel alone, coated with a lacquer, of which there are numerous types, would frequently prevent oxidation, but difficulties would arise in soldering the side seams of the cans at practical can making speeds. The natural tin coating also gives the container a very clean and shiny appearance.

It is practical, in certain instances, to make containers from black plate or terne plate. Black plate is the sheet of steel without the tin coating and it may be used effectively, when coated with lacquer or lithographed, for dry product containers where soldering of the side seam is not necessary and where oxidation is not an important factor. Terne plate, which consists of the same steel base, coated with a tin-lead alloy, may be used for the packing of many non-food products.

Tin plate, black plate and terne plate can be obtained in various thicknesses or weights, as they are commonly referred to in the canning industry. Also you may use a material called "charcoal plate." Sheets with the customary light coating of tin are known as "coke plate," but if a heavier coating of tin is applied, the sheets are known as "charcoal plate" and may be used when an exceptionally bright finish is required or when the container is to be subjected to heavy oxidation.

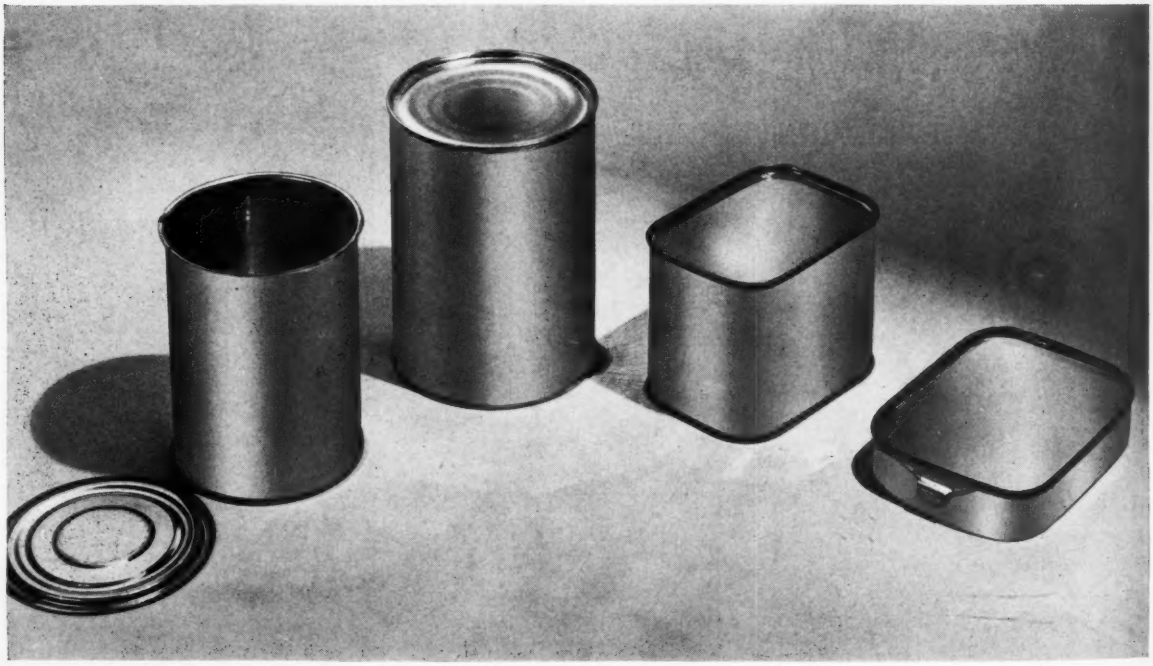
Acknowledgment is made to Philip L. Ferris of the Sales Department, Continental Can Co., Inc., for aid in the preparation of this article.

Product Determines Can Type

Now that we understand the material from which we will make our container—what is the nature of your

Cross References: Merchandising Considerations, page 11; Production Considerations, page 13; Color and Reproduction Methods, page 16; Fibre-Bodied Containers, page 98; Can Decoration Processes, page 240; Aluminum Containers and Vials, page 244; Specialty Metal Containers, page 246; Printed and Lithographed Labels, page 300; Labeling Machines and Devices, page 420; Case Packing and Sealing Machinery, page 450; Types and Functions of Adhesives, page 474; Corrugated and Solid-Fibre Cases, page 516; Metal and Fibre Drums, page 530.

1. Processed food cans. At extreme left, standard round can as supplied to the processer. At center, round can with top seamed on, ready for labeling. Right, rectangular can as used for asparagus and flat rectangular key-opening can as used for sardines etc.



PREMIUMS AND NOVELTIES •

Though known primarily as a company manufacturing tin containers of highest quality for specific products, *Continental* also produces many container specialties which serve a wide variety of purposes.

Shown here are but a few of these articles, better classed, perhaps, as premiums or novelties. Of standard design, they may be purchased from stock, and will meet many a need. If you are looking for attractive premiums of lasting value, why not see what *Continental* offers. Many items are "naturals" for Chain, Novelty or Co-operative Stores.

Naturally, these specialties show the fine workmanship for which we are famous. A representative is at your service . . . always.

One of a Series Devoted to Packaging Ideas. Copyright 1940 by Continental Can Company, Inc.

CONTINENTAL CAN COMPANY

NEW YORK · CHICAGO · SAN FRANCISCO · MONTREAL · TORONTO · HAVANA

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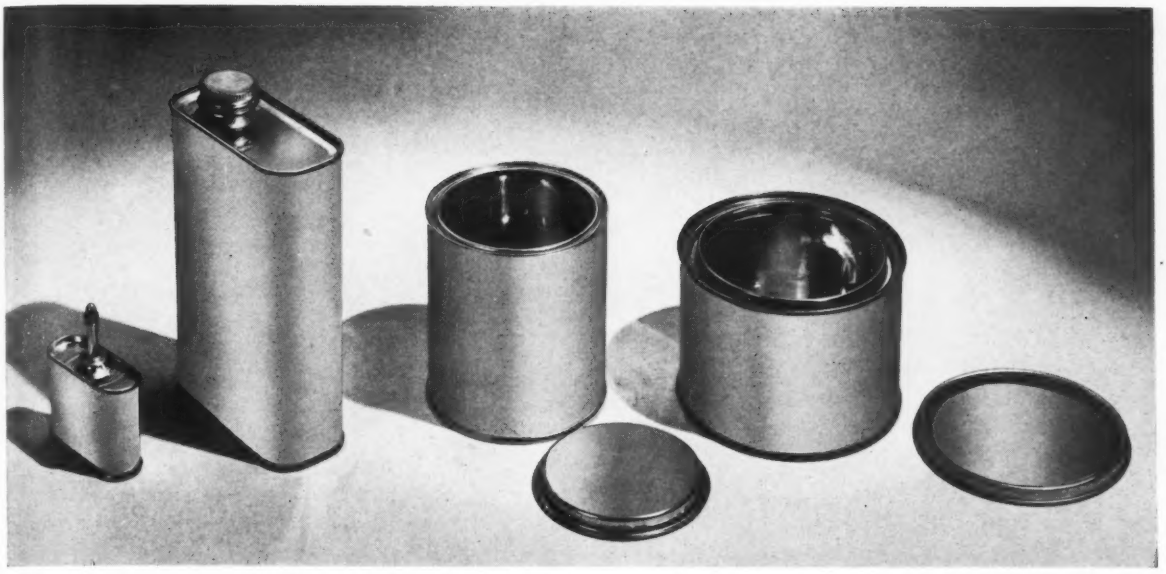


2. Non-processed-liquids containers. From left to right: oil can with extension spout closure; can with screw cap; can with single friction plug; can with triple friction plug.

product? Is it a processed food, a non-processed liquid, something dry, requiring complete protection from the air or not? Is it a specialty, or is it beer or oil? Can companies are equipped to furnish you with containers of all these types. Or will you require a completely new package? For purposes of simplicity, it might be well to take these problems up in turn.

Suppose you wish to package a processed food. There are certain problems that need to be discussed and carefully approached, but the chances are that we can take care of them. For your information, the cans suitable for holding processed foods are termed, in the industry, as packers or sanitary cans. Many different kinds of foods are put up in these containers. They include meats, vegetables, fruits, soups, fish and various specialties. If your product is something that has been packed before, there will be little difficulty in recommending a satisfactory container. If, on the other hand, it is new to the industry, it will probably be necessary for the research department of the particular company you select to carry out tests to determine whether a lacquer coating will be necessary or whether plain tin plate will be satisfactory. In either case, research departments are available to you.

The cans used for holding processed foods are generally cylindrical in shape, ranging in diameter from $2^1/_8$ in. to $8^3/_{16}$ in. and in height from $1^1/_8$ in. to $8^3/_4$ in. It is quite possible for you to use an oblong, square, oval or irregular shaped can, if you so desire, but the form of the product and consumer convenience should be the deciding factors. Familiar shapes, other than the cylindrical, are the tall oblong cans used for packaging asparagus, the short oblong types for sardines and the irregularly shaped cans in which various packers put up whole chickens, hams and plum puddings.

Manufacturing Operations

There are a great many variations in the methods of fabricating tin cans, ranging from an entirely hand made can to an entirely mechanically produced can.

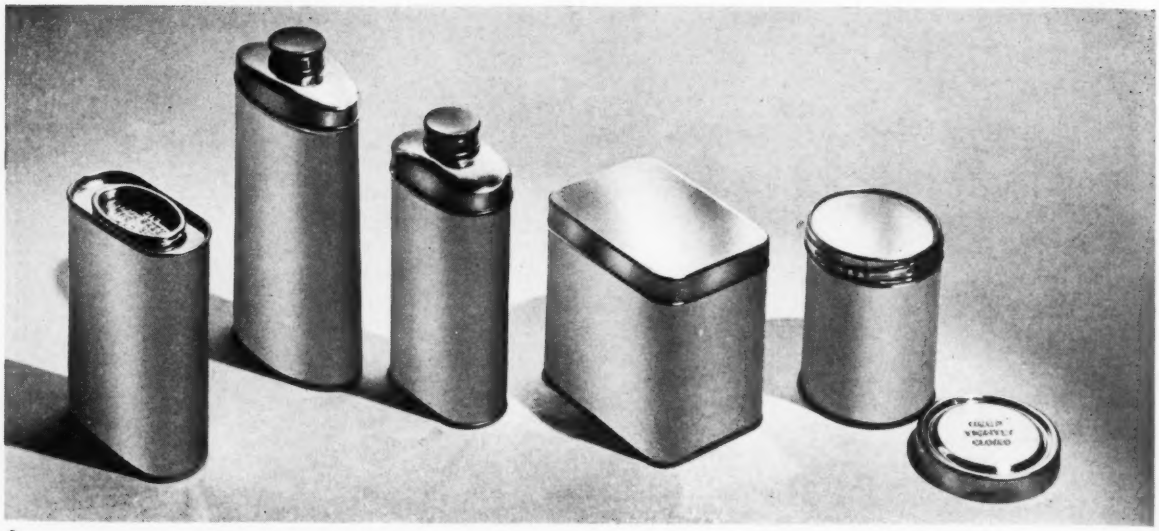
So that any unfamiliar reader may have an understanding of can making, there follows a brief description of the most modern method of producing sanitary cans.

The description of the operations follows in the sequence which occurs in actual manufacture:

1. Slitter—Cuts tin plate to size for the can body with revolving knives.
2. Body Maker—Forms the flat body blank into a cylinder and shapes, closes, bumps and solders the side seam on the outside.
3. Flanger—Flanges or expands the top and bottom of the can body previous to rolling of end seam.
4. Double Seamer—Attaches one end to the body with a rolled seam.
5. Tester—Tests the cans for leaks by air pressure or a vacuum.

Four separate operations make the ends:

1. Slitter or Scroll Shears—Cuts the tin into strips either straight or with scrolled edge to reduce waste.
2. Press—Blanks out and forms the can end.
3. Curler—Curls or bends the edge of the end to assist in seaming to the can body.



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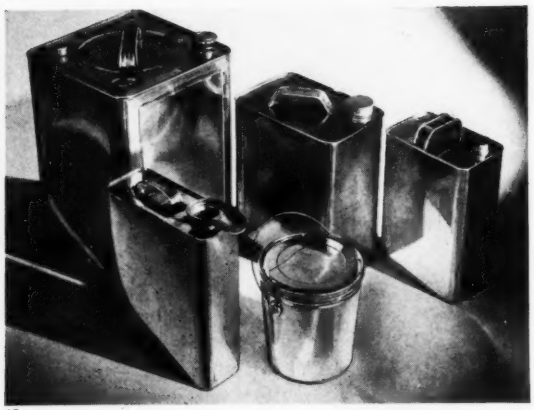

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3. Dry product containers showing various types of closures which may be utilized. **4.** Large liquid-holding containers equipped with sheet metal handles, wire handles, pouring spouts, etc. **5.** Seamless boxes and cans for shoe polishes, pills, paint sets, etc.

4. Compound Applier and Drier—Applies a ring of liquid gum around the edge of the can end to insure an air-tight seam.

The packing of processed foods is a highly technical problem, requiring experimentation and study to bring to the consumer a wholesome product which is equal to the fresh vegetable or the tree ripened fruit, as the case may be. It has meant years of work by the can companies to develop each detail of can construction and each lacquer and enamel which would suit the purpose. For your information, the packing of a processed food in a tin can requires hermetic sealing to prevent contamination and a heat treatment sufficiently high to kill all bacteria. Your product, packed under these conditions, will bring it to the consumer full flavored and as nearly as possible comparable to tree ripened fruit or plant ripened vegetables which have been picked at the absolute peak of ripeness.

In commercial canning, vitamins A and B are only slightly affected by heat. Vitamin C, which is destroyed by heat applied in the presence of free air, is retained in canned food products since the processing is done *after* the food is sealed in the can.

Our problem is of a somewhat different nature if you wish to package a non-processed liquid. Certain features of the sanitary can are retained since we must solder the side seam and compound line the ends, but here we do not have to process the contents. It is necessary, however, to select a suitable closure or pouring spout.

There is a large variety of cans available for non-processed liquids. These vary in size from the oval, 1-oz. can designed for special lubricating oils, to the square, 5-gal. can which is used for a large number of different products. Containers for these liquids can be made with round, oval, oblong or square bases and can be made in almost any practical height. They are designed to hold such products as oil, paint, varnish, syrups and insecticides and similar products.

In Distant Lands

AS IN THE UNITED STATES . .

New England tubes have won an enviable reputation for toughness! They are being specified in rapidly increasing numbers for many products needing special protection because of severe handling and climatic conditions. Faraway buyers, as well as those nearby, also appreciate the *completeness* of New England tube service. For here, from one big dependable source, they can get

1. The benefit of our exclusive metal toughening Sheffield Process.
2. Research to establish correct metal for product, and type of inner coating *if necessary.*
3. "VINICOTE" . . . an extensive series of modern inner coatings specially developed by us.
4. A full range of types and standard sizes.
5. Expert design service.
6. Master craftsmanship in color printing on metals.
7. Brilliantly colored clay coated cartons made by us and shipped simultaneously with the tubes.
8. Intensive, constant inspection, assuring uniform fine quality.
9. Speedy shipment in any quantities because of highly efficient large scale production.
10. BETTER TUBES AT NO HIGHER COST!

Write us about your needs. New England Tube Service can help you towards larger sales and profits.

New England SHEFFIELD PROCESS TUBES

NEW ENGLAND COLLAPSIBLE TUBE CO.

3132 SO. CANAL STREET, CHICAGO • NEW LONDON, CONN. • W. K. SHEFFIELD, 500 FIFTH AVENUE, NEW YORK
N. CAY MATTHIEU, 1965 PORTER ST., DETROIT, MICH. • THE WILCO COMPANY, 7016 McKINLEY AVE., LOS ANGELES, CAL.
EXPORT DIVISION: 116 NASSAU STREET, NEW YORK, U. S. A.

Can Dimension Variation

It is well to point out to you here that in your selection of a package you should realize that the base dimensions of tin containers are not variable, but that the heights can be changed to almost any suitable dimension. Can companies have equipment, however, to make almost any practical base size and as soon as you have selected the base you desire, the height of the can can readily be determined.

Containers for non-processed liquids, as well as those for dry products, which we will take up next, are known as "general line" cans. This group includes all the cans that are not designed to hold processed foods.

Our dry product containers generally do not require a soldered side seam and compound lined ends. Like the containers for liquids, they can be had in many shapes and sizes and, if your product is to be packed in such a package, it is unlikely that you will have difficulty in selecting what you require from a can company show case. This type of tin container is designed to hold such products as tea, coffee, spices, crackers, talcum powder and drugs. For some products, such as shoe polish and pills, where a shallow container is desired, the body and bottom of the container can be formed from a single piece of tin plate. Where this is done, the package is referred to as a seamless can.

There is one other can belonging to the general line group that you should know about. This is the key-opening vacuum can used by various packers of coffee and other dry products. The can is made with soldered side seam and compound lined ends and is designed to hold a high vacuum pressure, since any air left in the container after filling would result in the deterioration of its contents.

After you have selected the shape and size of your general line container, be it either for a wet or a dry product, you must decide on a closure which will not only keep the contents in the can, but which will also allow the ultimate consumer to dispense it with the least possible difficulty.

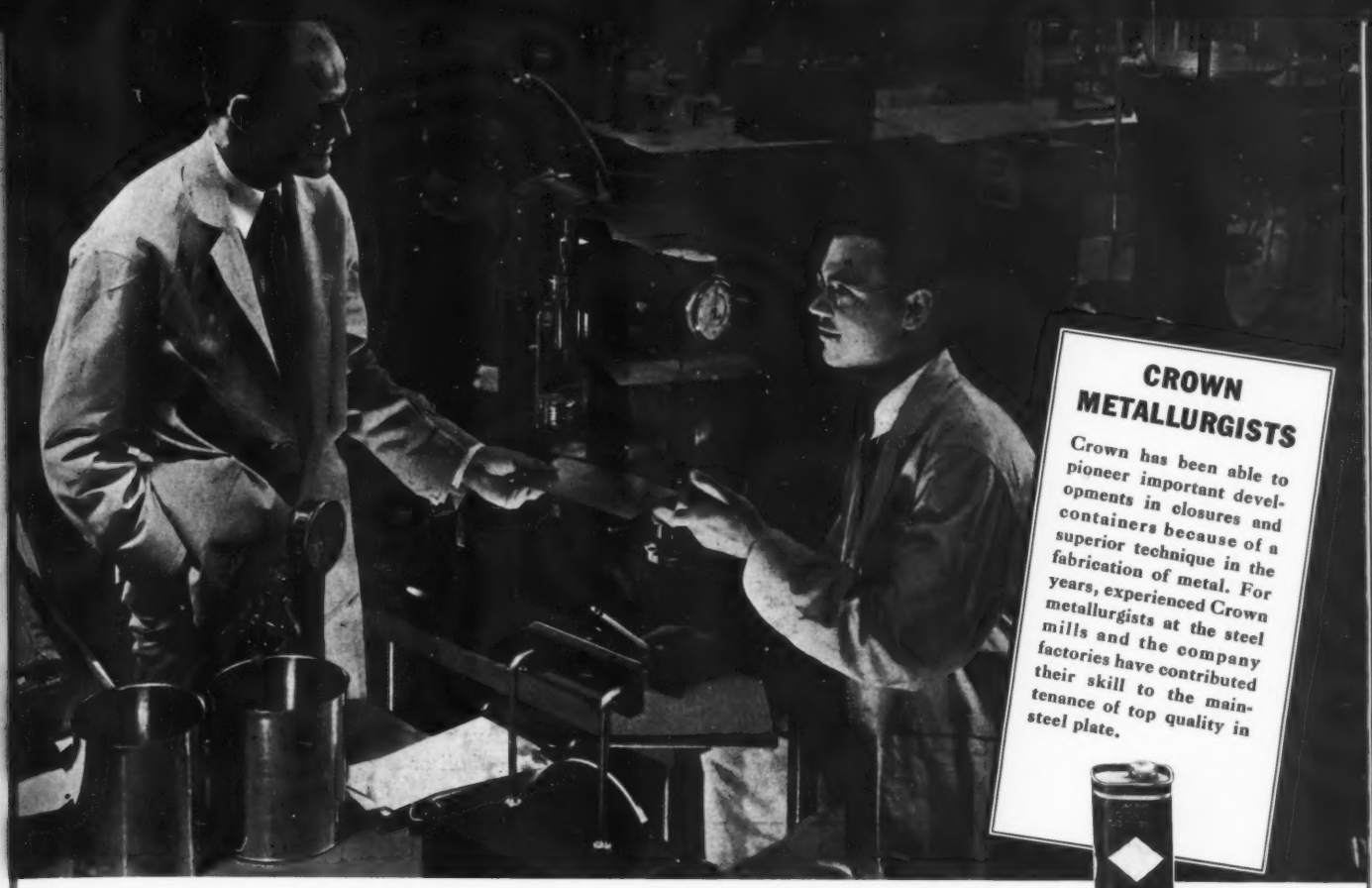
Can Closures

There are a great many types of closures for both dry and liquid containers, all of which have been devised for

6

7 8

6. Beer cans. Left to right: flat top; cap sealed quart; cap sealed 12 oz. and seamless cap sealed. **7.** Newly developed easy opening aspirin tin which dispenses with wire hinge. Top is held to bottom by embossed metal spots. **8.** Finger pressure at tin corners facilitates opening of this new aspirin container. Cover held by wire hinge.



CROWN METALLURGISTS

Crown has been able to pioneer important developments in closures and containers because of a superior technique in the fabrication of metal. For years, experienced Crown metallurgists at the steel mills and the company factories have contributed their skill to the maintenance of top quality in steel plate.

What is Quality in a Tin Can?

The story of Crown quality begins with the raw material . . . the selection of prime tinplate at the steel mills. From that point on, inspection after inspection, check after check, guarantee the maintenance of quality through every step of production.

Manufacturing facilities play no small part in safeguarding Crown quality. Crown production machinery is the most modern available . . . operated by men to whom "quality" is a tradition . . . supervised by engineers, technicians, metallurgists of proved experience at every step from tinplate to the perfectly finished can your product deserves!

CROWN CAN COMPANY, PHILADELPHIA, PA.

Division of Crown Cork and Seal Company

BALTIMORE ST. LOUIS HOUSTON MADISON ORLANDO FORT WAYNE NEBRASKA CITY

CROWN CAN

INDEPENDENT AND HELPFUL

XUM

the convenience of the consumer, permitting ease of re-closure for protection of the product.

Liquid containers are generally equipped with either screw caps, pouring spouts or one of the three types of friction plugs. The screw caps and pouring spouts can be obtained in numerous different sizes, their selection depending on the product and the type of flow desired by the consumer. The friction plug closures are round and are designated as "single friction," "doubletite" and "tripletite." As their names imply, they furnish a single, double and triple friction contact between the plug and ring affixed to the top of the can body. These three closures come in different sizes and little difficulty should be encountered in selecting a suitable size for your product.

Dry packages, like those for liquids, have many different closures and fittings. Again careful thought must be given to the consumer's convenience and the nature of the product. The closures most used are the slipon, hinged, slide and screw covers, as well as the dredges common to powdered products, and the single friction plug. Talcum powder and tooth powder cans usually are furnished with caps which slip over a perforated neck. Here the powder may be either sifted or poured, depending on the size and number of openings in the neck. Screw covers are also obtainable, as well as a closure known as the lock top, combining interrupted threads and dimples at the top of a round can body and around the skirt of the cover. A supplement to the lock top, which can be used, if required, is a paper seal curled into the top edge of the can body. This renders the contents tamper-proof and furnishes added protection from dust and dirt.

If you are a brewer or an oil refiner, you will consider tin containers for your product. The can for beer is now used by almost every well known brewer in the country and its advantages are at once apparent. The cans are light in weight, easily carried, take little space, are conveniently stacked and exclude light from their contents.

Three types of beer cans are available. One has a flat top, double seamed on by the brewer after filling and is opened by a special opener. Another is cap sealed and opens like a bottle. The third is similar to the cap sealed can, excluding the fact that its body is seamless.

The 1-qt. and 5-qt. containers for motor oil should need little introduction. Refinery sealed cans are tamper-proof and have made it impossible to substitute an inferior grade of oil or to give short measure.

Volume Tabulation of Popular Can Sizes and Typical Packs Including Those Listed by Division of Simplified Practice, National Bureau of Standards

Can Name	Can Size	Typical Commodity	Capacity in Ozs. Avdp.	No. 2 Can Equivalent
5 Z	202 x 214	Baby Food	4.85	.236
6 Z	202 x 308	Baby Food	6.08	.296
	202 x 309	Baby Food	6.2	.302
	208 x 109	Potted Meat	4.9	.238
	208 x 208	Potted Meat	5.5	.268
8 Z Short	211 x 300	Soups, Fruits, etc.	7.93	.386
8 Z Tall	211 x 304	Soups, Fruits, etc.	8.68	.422
No. 1 Picnic	211 x 400	Soups, Fruits, etc.	10.94	.532
No. 2 11 Cyl.	211 x 414	Juices	13.56	.660
No. 300	300 x 407	Soups, Baked B., Tom. Juice	15.22	.741
	300 x 408	Spag., Baked B., Tom. Juice	15.4	.749
	300 x 409	Dog Meat	15.7	.764
No. 1 Short	301 x 400	Fruits	14.02	.682
No. 1 Tall	301 x 411	Salmon	16.70	.813
No. 303	303 x 406	Peas and other Vegetables	16.88	.821
No. 303 Cyl.	303 x 509	Vegetables	21.86	1.064
	307 x 113	Tuna Fish	7.0	.341
	307 x 201	Salmon	8.3	.404
No. 1 Flat	307 x 203	Salmon	8.89	.433
	307 x 306	Vac. Vegetables	14.7	.715
	307 x 400	Baked Beans	17.8	.866
No. 2 Special	307 x 408	Fruits, Vegetables	20.25	.985
No. 2	307 x 409	Fruits, Vegetables	20.55	1.000
No. 2 Cyl.	307 x 509	Fruits, Vegetables	25.44	1.238
	307 x 510	Fruits, Vegetables	25.8	1.255
No. 1¼	401 x 205.5	Salmon	13.14	.639
	401 x 207	Salmon	14.3	.696
No. 2½	401 x 411	Fruit and Vegetables	29.79	1.450
No. 3	404 x 414	Fruit and Vegetables	35.08	1.707
	404 x 700	Juices	51.6	2.511
No. 10	603 x 700	Fruits and Vegetables	109.43	5.325
No. 1 Square	300 x 308 x 308	Asparagus	17.27	.840
No. 2½ Square	300 x 308 x 604	Asparagus	32.47	1.580

Can dimensions are expressed in the industry by the three digit figure. The first digit represents unit inches and the second and third digits represent the fraction of an inch expressed in sixteenths. Thus the No. 2 can, $3\frac{1}{16}$ in. in diameter, is described in the above system as having a diameter of 307. The dimensions given are approximate.

In the table at left the "No. 2 can equivalent" indicates the number of No. 2 cans equal to each of the cans designated in Column 1. The No. 2 case equivalent may be obtained by dividing the number of cans per case of the can to be converted, by 24, and multiplying the result by the "No. 2 can equivalent."

DEEP into PAY DIRT!

CONTAINER-WISE . . . *"NATIONAL"* tirelessly digs deep into the "pay dirt" of Package style . . . skillfully turning up practical *essentials and brilliant display features that quicken SALES from shelf and counter.* ★ *"NATIONAL" Container Service is deep-rooted in the rich soil of Experience. It presents a constantly fresh viewpoint on Sales-by-the Package, and expert craftsmanship in can-making and lithographed decoration adds every refinement of Container production and finish.*

"NATIONAL" TAKES OVER YOUR PACKAGING SPADE-WORK!

NATIONAL CAN CORPORATION

EXECUTIVE OFFICES • 110 EAST 42nd STREET • NEW YORK CITY

Sales Offices and Plants • NEW YORK CITY • BALTIMORE • MASPETH, N. Y. • CHICAGO • BOSTON • DETROIT • HAMILTON, OHIO

XUM

Can Decoration Processes

In the decoration of metal for lithographed containers, there are four important operations including preparation of the sketch, reproduction of the sketch, making of the plates and printing of the metal.

In preparing the sketch, the artists generally work from copy or a rough draft which has been submitted to them by the customer. The artist combines his own ideas with those of the customer, but it is important to note that the artist arranges his design in such a way as to avoid, if possible, intricate matching at the point where the side seam of the metal container will be formed. The things which must be avoided are the splitting of letters or figures so that they would come together at the seam. Lines which go around the can also often cause difficulties in matching at the side seam during the manufacturing operations.

The aid of the technical staff of the Owens-Illinois Can Co. in the preparation of this article is gratefully acknowledged.

One newly developed type of can is drawn rather than formed with a seam. Hence it can be decorated by lithography applied to the formed container as it rotates on a mandrel. The considerations of design which anticipate a seam can, therefore, be ignored in the case of this type of container.

The design may be reproduced in black and white or in color on suitable paper or cardboard which can be made into a model or submitted flat to the customer. This gives the customer a chance to visualize the appearance of the can and enables him to make necessary corrections before the work is carried forward.

Can Lithography

The first step in reproduction of the sketch is the drawing of a layout of the flat blank. This layout must show the center of the various panels to be made up in tin, the

Cross References: Merchandising Considerations, page 11; Production Considerations, page 13; Color and Reproduction Methods, page 16; Tin Packages and Cans, page 232; Printing Inks for Packages, page 496; Surface Coatings, page 502.

1

1. Photographic reproductions are possible through proved techniques in can lithography as demonstrated by these containers. Photo courtesy American Can Co. **2.** Can decoration frequently permits the conversion of the container into a re-usable toy or household accessory. Photo courtesy National Can Corp. **3.** Multicolor lithography on drum type metal box covers and the economical use of a single color on box bases often provides most attractive effects. Photo courtesy Geo. V. Clark Co., Inc. **4.** Designs for drawn type seamless cans can run around the full perimeter of the container since no allowance need be made for a seam. Photo courtesy Crown Can Co.

2

3

4

If you recognize the product...

IT'S PROBABLY A PEERLESS TUBE!

And if you're launching a new product, or want to build the sales of one already established, a Peerless Tube can help you. For tooth paste, cream, jelly, paint, food or any of a hundred other products that can be given the advantages of tube packaging, there's a Peerless aluminum, tin, lead or alloy tube to do the job. Standard shapes and unusual adaptations (see the prize-winning Shubador kit)—there's a Peerless tube to fit *your* need.

Leaders in all fields of merchandising use Peerless tubes. Follow the leaders! Write for samples.

PEERLESS TUBES PRESERVE AND OUTLAST THEIR CONTENTS

PEERLESS TUBE COMPANY • Bloomfield, New Jersey

CHICAGO
Rose Label & Box Co.
123 Madison St.

CINCINNATI
J. E. McLaughlin
401 Lock St.

MINNEAPOLIS
W. R. Malecker
Northwestern Bank Bldg.

LOS ANGELES
W. I. Frost
4990 Melrose Ave.

XUM

5

6

5–6. Gift containers are frequently elaborately lithographed with as many as eight and ten colors. Photo courtesy Owens-Illinois Can Co.

space necessary for the right and left hooks, the position of the bead, if a beaded can is to be made, the space necessary for the spin of the top and bottom and the space for soldering where plans call for a soldered can.

Once this layout has been made, it is enlarged by camera and the artist then proceeds with the black drawing, using the photograph as a guide. After the drawing has been completed, it is reduced to its proper size by use of the camera again, prints are made and they are properly placed in the working layout.

The layout in this form is then photographed again and as many negatives are made as is necessary to reproduce the sketch. These negatives are alike and it is necessary for the artist to complete each negative according to the color it will have to reproduce. The negatives are then ready for the making of the press plates.

The plates are made of zinc or aluminum which is first thoroughly cleaned and then treated with a sensitizing solution poured on the plate while it is being rotated in what is known as a whirler. The whirler rotates the plate at various speeds, spreading the solution evenly over the entire surface and drying it at the same time by electric heat.

This sensitized plate is now placed in the photo composing machine and the machine is moved into proper position on the plate. The negative and plate are brought into contact by vacuum and the first print is made through the medium of an arc-light. The machine is then moved in the next position of the layout on the plate and the operation is repeated as often as necessary to print the number of individual blanks. The plate is next covered with developing ink, developed and etched and is then ready for use in printing on the metal.

The tin plate, which is used for making cans, may be either plain or coated. If it is coated, the white or colored coating is applied on a coating machine and the plate is passed through a gas heated oven which bakes the coating on the tin plate.

If the metal is to be subjected to fabricating stresses, it may be necessary to apply a sizing material previous to the coating of the tin plate. Lithographing on the prepared tin plate is done on a press by offset.

The plate is placed on the upper cylinder of the press, a rubber blanket on the center cylinder and the lower cylinder is set to act as a pressure surface. The ink is fed from a fountain by rollers and thus spread over the plate. The plate, revolving on the upper cylinder, applies the ink to the blanket. The metal passes through the press between the rotating blanket and the pressure cylinders and, in the operation, the ink is transferred from the blanket to the metal.

The decorated sheet is then passed from the press through a gas heated oven for baking and drying. This operation is repeated for each color applied to the sheet. After all colors have been applied, the sheet is varnished and it is then ready for fabrication by the manufacturing department.

Lacquers

A lacquer is a transparent or semi-transparent film made from resins dissolved in proper solvents. When lacquered sheets pass through the baking oven, the volatile solvents are driven off and the solid matter remains as a transparent film.

The primary use of a lacquer is to protect tin plate from the corrosive action of fruit acids or vegetable chemicals. Such lacquers are called sanitary lacquers or enamels. A lacquer designed to withstand the cooking of a food product is called a processing lacquer.

In recent years, it has been found that color may be added to lacquers to form semi-transparent films which produce an attractive appearance on can and metal box interiors and exteriors. Among the available colors are deep golds, greens, reds and blues. The last three are usually utilized for the outside surfaces of containers and particularly for bottle and jar caps.

Varnishes

These are colorless films applied in the same manner as coatings and lacquers. They are made from colorless resins with proper solvents and are employed to give lustre and toughness when applied on top of coatings. Their main use, however, is to give protection and lustre to a printed surface.

COLLAPSIBLE TUBES BY VICTOR

FABRICATED OF
TIN
ALUMINUM
LEAD
TIN COATED LEAD

THE BARBASOL COMPANY HAS FOUND A PURE ALUMINUM TUBE THE IDEAL CONTAINER FOR THEIR POPULAR BRUSHLESS SHAVING CREAM.

Victor Metal Products Corp.

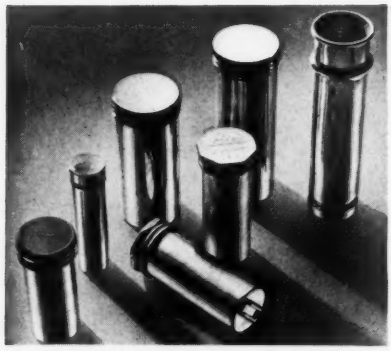
202 DIAMOND STREET **BROOKLYN, N. Y.**

XUM

Aluminum Containers and Vials

Aluminum vials, "bottles" and similar containers have been adopted by a number of packagers, particularly in the drug fields, because of their strength, lightness and resistance to breakage. These packages are particularly desirable for the packing of medicinals and drugs and wherever the package is to be re-used by the consumer as a pocket carrier container. In addition, the use of aluminum finds advantages in attractiveness, in imperviousness to light and moisture and freedom from deterioration and toxicity.

Acknowledgment is made to G. H. Fitch of the Aluminum Co. of America for aid in the preparation of this article.



1. Cylindrical aluminum containers with various types of closures and fittings. Courtesy Aluminum Co. of America. **2.** Decorated aluminum vials. Courtesy Victor Metal Products Corp. **3.** Aluminum bottles. Courtesy Aluminum Co. of America.

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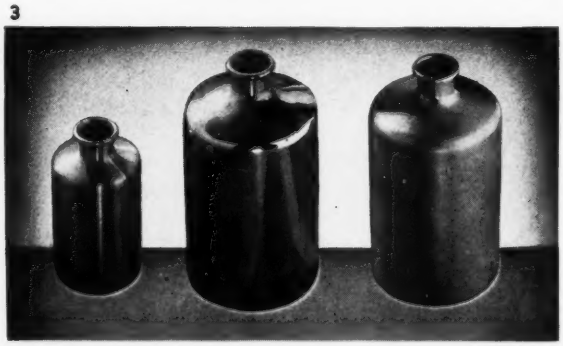


By means of the impact extrusion and drawing processes used to produce aluminum containers, numerous shapes and sizes are available. For this reason, the container can be more or less adapted to the product to be packaged even though the product may be of a somewhat unusual shape, type or texture. Whether the impact extruded container or the drawn container is the most economical to select depends, obviously, upon the design of the container required. In most cases, aluminum cans of shallow depth and uniform thickness can be most economically produced by drawing, while the deeper containers are more readily formed by the impact extrusion process which consists of "squirting" the metal in its highly plastic form around an extrusion punch, thus forming a shell from a metal slug.

Subsequent threading, beading, piercing, knurling, fluting and spinning operations can be performed on aluminum containers to further adapt them to the individual packager's requirements. Frequently, lettering and designs are embossed or stamped in the impact extruded containers thus giving permanent identification to the package. Sizes up to four inches in diameter and ten inches in height can be produced.

To create an attractive appearance, the containers can be enameled, lithographed or given a hard, durable oxide coating. Effects in natural aluminum can be obtained by polishing, dipping or satin finishing. Printed paper labels can also be readily applied to aluminum containers to obtain other effects.

Aluminum containers are particularly suitable for packaging drugs and cosmetics because of the eye-appeal that either the plain or colored finishes afford. In some cases, distinctive combinations of aluminum and glass have been used for products of this type. Small combination units, consisting of holders and covers, have been used for such items as styptic pencils, lipsticks, shaving soaps and inhalants. Aluminum's inherent properties of lightness, strength, chemical inactivity to most materials and non-toxicity have been instrumental in bringing about the use of aluminum bottles for packing and shipping essential oils, food extracts and other similar products.

Cross References: Cellulose Derivative Containers, page 148; Tin Packages and Cans, page 232; Specialty Metal Containers, page 246; Collapsible Metal Tubes, page 250; Can Decoration Processes, page 240; Glass Vials, Tubes and Ampoules, page 297; Plastics for Packaging, page 318.

Solved—another packaging problem!

MILADY'S MANICURES NOW SMOOTHLY FLOW FROM THESE 4 INGENIOUS *Wirz* TUBES

It's news in packaging the way these four new Wirz Tubes with their ingenious applicator tips permit the smooth flow of polish remover, nail cream, cuticle remover and nail enamel, to fingertips. And it's news in sales the way these new manicure packages are catching feminine fancy . . . It was our privilege to cooperate with the creator and patentee, Appli-Tube Corporation, for our client, Ohio Cosmetic Company, on these new merchandising units with their intricate assembly features which add new, sanitary convenience and sales appeal to the products, and prove again the adaptability of Wirz Collapsible Tubes. Ours is a long experience in successful tube design and manufacture. *America's first tubes were WIRZ tubes* . . . If you have a packaging problem in creams, pastes, powders, liquids or semi-liquids, our Research Staff will gladly work with you to find the successful solution. Write us or call our representative.

Export Division—751 Drexel Building, Philadelphia, Pa.

NEW YORK, N. Y.	CHICAGO, ILL.	DANVILLE, CALIF.	MEMPHIS, TENN.
30 E. 42nd Street	80 E. Jackson Boulevard	A. G. Spilker	Wurzburg Bros.

HAVANA, CUBA, Roberto Ortiz Planos

COLLAPSIBLE METAL TUBES — TIN • ALUMINUM • TIN-COATED LEAD • LEAD • LACQUER LININGS • WAX LININGS • WESTITE CLOSURES • APPLICATOR PIPES • METAL SPRINKLER TOPS • HOUSEHOLD CAN SPOUTS

PHOTOGRAPH BY ROPER—ENGRAVINGS BY PHOTOTYPE

XUM

Drawn metals are frequently used to form specialty containers as interior accessories in combination packages. Here shown are two-piece soap, toothbrush and powder containers for gift merchandise sets. The highly polished metal may provide the decorative motif, as in this instance, or decoration may be secured by color application, labeling, etc. Photo courtesy Scovill Manufacturing Co.

A group of cosmetic containers which serve both as sales packages and for continued use. Decorative polished metal surfaces are frequently combined with enamels, as in the case of the packages in the foreground. Nickel, brass, chromium and aluminum are the most widely used metals. While special tools are often used, a wide range of containers of each type can be made with existing standard dies and tools and differentiated from others on the market by changes in enameling. Photo courtesy Scovill Manufacturing Co.

Specialty Metal Containers

Among the items included under the general head of Specialty Metal Containers are the following: triple compacts, double loosepacts, single compacts, rouge boxes, eyeshadow boxes, mascara boxes, lip-rouge boxes, many sizes and styles of ordinary slide-elevator lipsticks, swivel lipsticks, perfume dispensers and containers for packaged face powder. All of these items are finished in various ways such as combination of enamel and metal finishes, as polished nickel, chrome and brass; brushed nickel, chrome and brass, all having varying designs dependent entirely upon the customer's requirements and specifications.

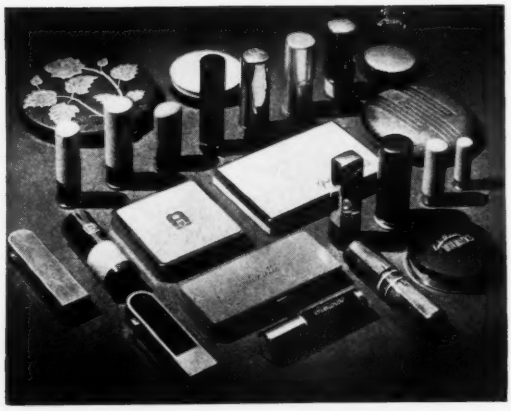
For years brass has been the standard material used as a base for these containers, but recently several items of aluminum have been introduced. Aluminum is considerably lighter than brass and products made from it are now available in an anodized finish which provides a wide range of colors with a bright glossy surface.

In cases where the quantity ordered is large, manufacturers of specialty material can supply containers

Watch box designed with particular emphasis on effective display. Three stamped metal sheets form the sliding door housing, set on a metal base covered with velvet. Watch-holding pad is also of velvet-covered metal. Photo courtesy Farrington Manufacturing Co.

"Use BURDICK for the Small and Medium Sized TIN CANS"
Ronall PEARL TOOTH POWDER
BISMUTH-FORMIC-IODIDE COMPOUND
B·F·I
Little Liver Pills
CLUTCH
RAMON'S BILE SALTS
BLACK BEAUTY STOVE POLISH
FOR BEST RESULTS USE ON WARM OR HOT STOVE
GRIFFIN BLACK A·B·C WAX SHOE POLISH
D. JAYNE'S LAXATIVE PILLS
DERMA MEDICONE IN SKIN IRRITATIONS
GASTRO-SEDATIVE
RAMONS PINK PILLS
• Our specialization in the automatic production of small and medium sized lithographed tin cans is so complete and efficient that the important users of larger sized cans come to us for their smaller sizes and their sample packages.
• Our entire personnel and plant, including every modern, high-speed machine in it, are attuned to the quick, economical manufacture of small and medium sized cans. Our entire experience, our designing knowledge, our entire history all revolve around the solving of this specialized problem.
• The result of our specialization is: we are able to design and produce your smaller tin containers better, quicker, more economically.
BURDICK & SON INC.
ALBANY • NEW YORK

XUM



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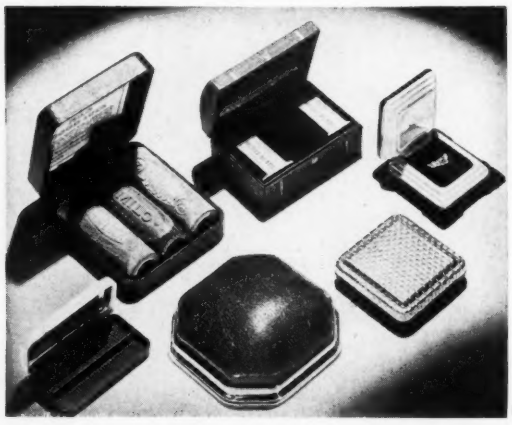

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made to order to meet the individual requirements of one customer's line. Many manufacturers, however, now carry stock or standard types of containers and lipsticks, making it relatively inexpensive for the user to obtain even specially individualized containers at modest prices and in medium quantities.

There are also boxes of metal form covered either with leather, with water-proof fabric coated and grained to appear as leather, velvet or some other fabric and lined with velvet or satin.

Many articles, such as delicate instruments, safety razors, measuring tools, sewing kits, cosmetics, manicure sets and medals, are displayed in boxes which serve as permanent containers. In this field, these metal boxes have an advantage for they are made of materials that will withstand constant use over a period of years and may thus be retained as permanent storage units.

These boxes were first developed about 30 years ago for the jewelry trade and were offered as a substitute for the expensive hand made wooden form boxes. The cost of metal form boxes is much lower than that of the wood type and very close to what jewelers had been accustomed to paying for the lined paper boxes. In more recent years, the metal form box, with either fabric or leatherette cover, has come to assume a position of increasing importance in this field and has been adopted by many manufacturers for high-priced jewelry and watches as well as for safety razors and numerous other similar articles of merchandise.

The styles vary from the plain dome top box to the wide edge colonial shape and the double step. Each can be decorated by the addition of gold tooling or plain or fancy metal edges, by metal bands and many other display accessories.

The patented wide edge box is an improvement over the wooden form colonial shape in that the wide edge may be in a contrasting material and color to serve as a decoration when the box is closed as well as when it is open. A variety of effects can be obtained by the use of different edges, domes, toolings and colors and with various styles of linings. Exclusive styles are possible and even an exclusive size, when a very large quantity of boxes is required, may be obtained.

4. Cosmetic containers combining enamel with metal finishes. Courtesy Scovill Manufacturing Co. **5.** Metal containers of nickel, chrome or brass combined with enamel finishes. Courtesy Majestic Metal Specialties, Inc. **6.** Hinge lid jewelry and utility cases. Courtesy Farrington Manufacturing Co.

Cross References: The Food, Drug and Cosmetic Act, page 20; Permanent and Re-Use Boxes, page 94; Tin Packages and Cans, page 232; Aluminum Containers and Vials, page 244; Plastics for Packaging, page 318.

Pictorial Proof that

SUN TUBE UNITAINERS

can solve your Container Problem!

IF YOU PACK ANY SINGLE-USE PRODUCT—POWDER, LIQUID, JELLY, TABLET, PASTE—CALL ON SUN TUBE FIRST!

THE tubes pictured above tell the story of Sun Tubes' *adaptability* more clearly than words!

You can instantly see—from this cross-section of recent Sun successes—that there is practically no limit to the products and types of products whose packaging problems Sun is prepared to solve.

Sun Tube Unitainers alone meet *all* the requirements of one-shot, one-dose, one-application packaging. They're feather-light, portable as a wrist watch, break-proof. Because they're hermetically-sealed—neither dirt nor germs nor light nor air nor moisture can threaten their contents. A handier container has yet to be devised . . . for Unitainers are opened instantly with the fingers—require no separate opener. They're perfectly suited to advertising and display.

Included in the long list of fast-selling products which have adopted Unitainers in recent years are hair tonic, surgical dressings, small auto parts, house paint colors, coffee, a fire extinguisher, headache powder, nose drops, solder, shampoo, salines!

Consider your product. Wouldn't Unitainers fit perfectly into your selling or sampling picture? Judging by the wide range of products in the photograph above—they probably would! Write for details today.

SUN TUBE CORPORATION, HILLSIDE, N. J.

CHICAGO, ILL.
James L. Coffield, Jr.
333 No. Michigan Avenue

CINCINNATI, OHIO
G. M. Lawrence
1012 Elm Street

ST. PAUL, MINN.
Alexander Seymour
701 Pioneer Building

LOS ANGELES, CALIF.
R. G. F. Byington
155 No. Vermont Avenue

XUM

Collapsible Metal Tubes

Collapsible tubes are one of the oldest of package types, having been in use for over a century. From the standpoint of consumer convenience, the collapsible tube offers many advantages in terms of effective seal and re-seal, easy manipulation, protection for the contents and assurance against substitution or adulteration.

From the standpoint of the packager, tubes possess such advantages as lightness of weight, minimized breakage in shipment and the elimination of problems of labeling and capping. The development of highly efficient automatic machinery for tube filling and cartoning has contributed to lower the cost of collapsible tube packaging.

Tube Classifications

Collapsible tubes may be classified into four general types, considering the materials from which the tubes are fabricated.

1. Pure tin tubes are made of new virgin tin, alloyed with a small amount of copper or other suitable stiffener, in minute quantities. No adulterant, such as lead or other soft metals, is used in these tubes and they are essentially for use for any product going on or in the human body. Tin tubes are light, strong and durable; chemically inert; and perfectly suited as sanitary containers for foods and cosmetics.

Tin tubes are used principally for the packaging of tooth pastes, shaving cream, cold cream, vanishing cream, cosmetics, depilatories, vaginal jellies, ointments, food products, artists' colors and paints, tinting colors, cements, stain solvents and hand soaps.

2. Aluminum tubes are lighter in weight and slightly stiffer than tin. Aluminum tubes require some research in the adaption to certain products, particularly those containing alkalies, but in general, they cover the same field as collapsible tin tubes. However, a new product should be tested for 60 days before tubes are adopted.

Aluminum tubes are used principally for the packaging of tooth pastes, shaving cream, cold cream, vanishing cream, cosmetics, vaginal jellies, ointments, food products, artists' colors and paints, tinting colors, inks, adhesives, cements, belt dressing, engine compounds, greases, hand soaps and leather softeners.

3. Lead tubes, known as lead alloy tubes, are made of pure lead with antimony or tin and antimony, and chiefly used for adhesives, shoe creams, rubber cements and articles where the contents will not be used on the human body.

Lead tubes are also used for the packaging of artists' colors and paints, tinting colors, inks, belt dressing, engine compounds, greases, stain solvents, leather softeners and insecticides.

4. Tin-coated tubes, having a lead alloy base with an evenly distributed thin coating of tin on the inside and the outside, are made in such a manner that the two metals cannot be separated. These are the heaviest

Cross References: Merchandising Considerations, page 11; Production Considerations, page 13; Color and Reproduction Methods, page 16; The Food, Drug and Cosmetic Act, page 20; Cellulose Derivative Containers, page 148; Plastics for Packaging, page 318; Filling Liquids and Pastes, page 396; Collapsible Tube Filling, page 440.

1. Tubes for such varied products as cements, cheese, sunburn creams and fish bait. Courtesy National Collapsible Tube Co. **2.** Standard sizes of tube openings. Courtesy Standard Specialty and Tube Co.

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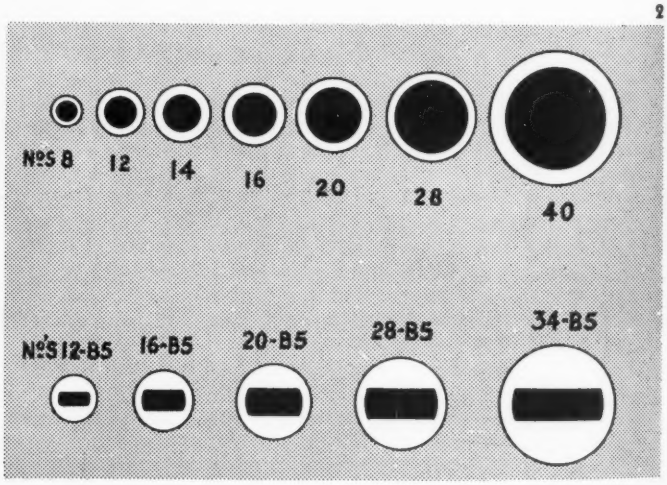
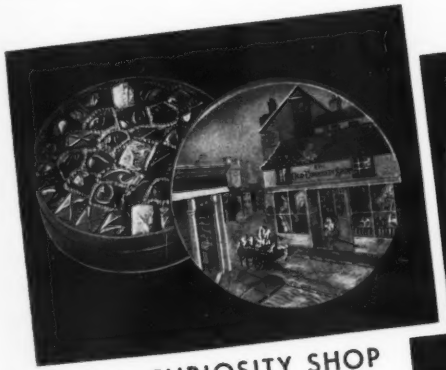


SHOW WHAT YOU SELL-

with SEE THRU

COUNTER SPACE IS VALUABLE
MANUFACTURERS WHO HAVE ADOPTED THESE ATTRACTIVE CONTAINERS HAVE FOUND THE RETAILER EAGER TO DISPLAY THEM PROMINENTLY. SHOW YOUR PRODUCT AND WATCH YOUR SALES INCREASE.



• OLD CURIOSITY SHOP

• GAY NINETIES

AND IF YOU PACK IN METAL
COLOR AND DISTINCTIVE DESIGNS ARE THE IMPORTANT FACTORS WHICH INFLUENCE SECURING PREFERRED DISPLAYS.

OUR STAFF WILL BE GLAD TO HELP YOU ON ANY PACKING PROBLEM WITHOUT OBLIGATION.

GEO. V. CLARK CO., INC., 42-26 13 ST. LONG ISLAND CITY, N. Y.

STANDARD SIZES AND CAPACITIES OF TIN, TIN-COATED, LEAD ALLOY AND ALUMINUM TUBES

Diameter x Length	CAPACITY Fluid Ounces	C.C.	Usual Opening and Neck
3/8 x 2	3/4 dr.	2.77	No. 8
1/2 x 2	1 1/2 dr.	5.54	8-10
1/2 x 2 1/2	1 3/4 dr.	6.47	8-10
1/2 x 3	2 dr.	7.39	8-10
1/2 x 4	2 3/4 dr.	10.17	8-10
5/8 x 3	3 dr.	11.09	10-12
5/8 x 3 1/2	3 1/2 dr.	12.94	10-12
5/8 x 4	4 dr.	14.79	10-12
3/4 x 3 1/2	5 dr.	18.48	12-14
3/4 x 4	6 dr.	22.18	12-14
7/8 x 3 1/2	7 dr.	25.88	12-14
7/8 x 4	1 oz. 0 dr.	29.57	12-14
7/8 x 4 1/2	1 oz. 1 dr.	33.27	12-14
1 x 4	1 oz. 2 dr.	36.97	16
1 x 4 1/2	1 oz. 4 dr.	44.36	16
1 x 5	1 oz. 6 dr.	51.75	16
1 x 5 1/2	2 oz. 0 dr.	59.15	16
1 x 6	2 oz. 2 dr.	66.54	16
1 1/8 x 4 1/2	1 oz. 6 dr.	51.75	16
1 1/8 x 5	2 oz. 0 dr.	59.15	16
1 1/8 x 5 1/2	2 oz. 2 dr.	66.54	16
1 1/8 x 6	2 oz. 4 dr.	73.93	16
1 1/4 x 4 1/2	2 oz. 0 dr.	59.15	16-20
1 1/4 x 5	2 oz. 3 dr.	70.24	16-20
1 1/4 x 5 1/2	2 oz. 6 dr.	81.33	16-20
1 1/4 x 6	3 oz. 1 dr.	92.42	16-20
1 3/8 x 5	3 oz. 0 dr.	88.72	20-28
1 3/8 x 5 1/2	3 oz. 4 dr.	103.51	20-28
1 3/8 x 6	4 oz. 0 dr.	118.29	20-28
1 1/2 x 6	4 oz. 4 dr.	133.08	20-28
1 1/2 x 6 1/2	5 oz. 0 dr.	147.87	20-28
1 1/2 x 7	5 oz. 4 dr.	162.65	20-28

Note:—It is possible to obtain even the smallest neck (No. 8) on the largest tube and also a large neck on small tubes (within limits so that the cap does not come within 1/16" from the diameter of the tube).

weight tubes (most manufacturers make these the same weight as lead alloy tubes) and seem to be declining in volume steadily in the collapsible tube field as the final appearance is not as good as pure tin or aluminum.

Tin-coated tubes are used principally for the packaging of artists' colors and paints, tinting colors, inks, adhesives and cements.

Tube Specifications

There is no great trick in drawing tube specifications. The dimensions are determined by the amount of product it is desired to pack or by the size of tubes used in similar price lines by established competing products. The size of the neck opening is, in large measure, determined by the plasticity of the product and the quantity ordinarily used in one application. Thus, "brushless" shaving creams are packed in tubes with large openings, opthalmic ointments in tubes with pinhole tips.

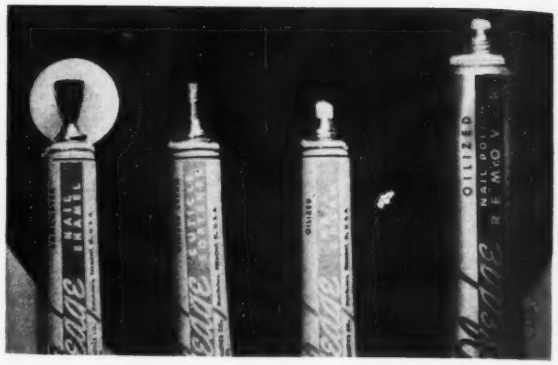
Specifications for tubes require the following data:

DIMENSIONS: Diameter at the shoulder; length from shoulder to open end.
Size of neck or diameter of neck opening.
Wall thickness at shoulder.

CAP: Material and type of cap; type of liner.

DECORATION: Shoulder embossing, if any; coating and number of colors in printed matter.

METAL: Tin, tin-coated lead, lead or aluminum.



3. Newly developed brush-tip tubes for nail polishes and nail polish removers. Courtesy A. H. Wirz, Inc.

Reasonable manufacturing tolerances should be allowed in diameter, length and weight.

Design and Decoration

The cylindrical shape of collapsible tubes is dictated by the method of manufacture and the method of closing and sealing. Possibilities of variation in structural design are, therefore, nil. Design enters into the appearance of the cap and the embossed decoration on the shoulder, but it is on the "label" or side that design has fullest opportunity. While the fixed cylindrical shape imposes certain limits, these are the only limitations. Label designs may be of any character capable of reproduction by zinc etching, photogravure or halftone. Decoration may be printed or embossed and printed in from one to four colors on a white or tinted coating. By the use of process plates, additional tints can be secured. The brilliant metallic surfaces, currently so popular, can also be produced on tubes with a high degree of fidelity. To equal the brilliance of lacquer-coated printing on paper, a similar coating, which is also alkali resistant, may be applied over tube decoration.

Special Types of Tubes

In addition to the standard types of collapsible metal tubes, there are available for various purposes certain applicators which may be applied separately to tubes and others that are integral with them.

Eye-tip: Eye-tip tubes are often called opthalmic tubes and are used for eye preparations. These are available in tin or lead and tin tubes are recommended for use if the preparation is to be used on or near the eye. Lead is only suitable for light lubricants or similar use in conjunction with eye-tip tubes.

Nasal-tip: Nasal-tip tubes are made in different types and are supplied in tin or lead, with tin tubes suitable for nasal jellies, ointments and any other preparation used on or in the human body, and with lead-tip tubes supplied for oils, greases, rubber cements and other commercial purposes.

Screw-eye: Screw-eye tubes are furnished in tin, lead or aluminum and are suitable for rubber cements, pyroxylin cement, adhesives and similar commercial uses.

HERE'S SOMETHING *worth knowing..*

Plain Alcoa Aluminum Tubes May Be Used For:

Brushless Shave Creams	Neutral Cleansing Creams
Nourishing Tissue Creams	Deodorizing Creams
Liquefying Facial Creams	Vanishing Facial Creams
Make-Up Remover Creams	Vitamin Skin Creams
Nail Polish Remover	Vitamin Ointments
Permanent Wave Creams	Lubricating Jellies
Wax-Type Depilatories	Neutral Tooth Pastes
Rouge Paste	Facial Paint Paste
Neutral Pharmaceutical Balms	Petroleum Base Ointments
	Eye Preparations
Neutral Sunburn Balms	Lacquer Cements
Lubricating Grease	Paint Paste Concentrate

Coated Alcoa Aluminum Tubes May Be Used For:

Brush-type Shave Creams	Tooth Pastes, Acid or Alkaline
Astringent Creams	
Pharmaceutical Ointments, Acid or Alkaline	Antiseptic Ointments
	Mercurial Ointments
Facial Mud Masks	Contraceptives
Cold Creams (Facial)	Mechanics Soft Hand Soap
Vitamin Skin Creams	Mascara
Shampoo Creams	Venereal Ointments
Glues	Shoe Polishing Creams
Prepared Cheese Spreads	Detergent Paint Cleaners
Prepared Fish Spreads	Prepared Butter Spreads

ABOUT ALCOA ALUMINUM TUBES

New developments make the economy of Aluminum available to more tube users than ever before; developments in the form of inert interior coatings that prevent reaction between product and tube.

Alcoa coatings suitable to a vast range of products are now available. So even if your formula doesn't get along with plain Aluminum, Alcoa chemists can prescribe the proper coating for it.

Check your tube costs over a period of years. Compare them with the present costs of Alcoa Aluminum Tubes. Consider the extra strength and lightness of Aluminum. You'll see why so many manufacturers have switched to coated Alcoa Aluminum Tubes.

ALUMINUM COMPANY OF AMERICA,
2150 Gulf Building, Pittsburgh, Pennsylvania.

ALCOA ALUMINUM TUBES

XUM

Plug, pin, etc.: Special tubes are made with heavy conical shaped plugs as a closure and also with pins for insertion in the neck. These types are used chiefly with adhesives, library pastes and similar products.

Pile pipes: Pile pipes are available in pure tin or aluminum in sizes which fit standard necks and are obtainable with either side or end openings or both. Other special types of pile pipes, vaginal pipes and applicators are also available.

Applicator tubes: A recent development is a self-contained applicator tube which is especially suited for pile ointments and combines the separate tube and pipe in one package. In this there is no separate applicator to become lost; there is nothing to attach and the container is ready for instant use, and a long slip cap covers the applicator, keeping it free from dust and dirt.

Vaginal pipes: These are made of pure Straits tin, specially treated, and are safer and more sanitary than those made of other material. They can be supplied straight or bent at almost any angle.

Single Dose Tubes

Single dose tubes, or shells, are collapsible tubes designed for a single application or to provide a single portion of a product. Their development is significant in that they involve, for many products, a new theory and method of merchandising. They make it possible to package in tubes not merely pastes, but liquids and powders as well.

Single dose tubes are designed to be opened in a number of different ways. They may be punctured or torn and are frequently designed with score marks to facilitate such tearing. Other tubes are formed with a small tip which may be removed by bending back and forth once or twice.

Shells afford an extremely high degree of protection for the product, being seamless except for the hermetic closure. Being light in weight and proof against refilling or substitution, they have proved attractive to manufacturers of a wide range of products. Among these may be mentioned coffee powders, headache powders, hair tonics, oil colors, soaps and cleansing preparations, etc.

Single dose tubes are frequently utilized as sample containers or for the merchandising of miniature introductory packages of products ordinarily sold in large containers of other types. Thus, manufacturers of headache powders have found it practicable to merchandise small portions by the use of these tubes set on, to display cards and sold by roadside stands and at restaurant cashier counters. They have achieved such distribution through unorthodox channels, without offending the main distributive agency, the retail pharmacist, who sells a completely different package. Shells may be decorated in manner identical to that utilized in collapsible tube decoration.

4. A group of single dose tubes illustrating the wide variety of sizes available and the wide range of applications which have to date been found for these tubes. The large tube at the left forms a fire extinguisher, far less expensive than previously available types. The small tubes at extreme right are for single dosages of headache powders, for glue or for nose and throat drops. Courtesy Sun Tube Corp.

4

GLASS CONTAINERS AND CLOSURES

Section Eight

Pages 255 to 298

GLASS BOTTLES AND JARS

HAND MADE GLASS BOTTLES

PRIMARY AND SECONDARY CLOSURES

CLOSURE LININGS AND SEALING COMPOUNDS

GLASS FINISHES FOR CLOSURES

GLASS VIALS, TUBES AND AMPOULES

XUM

Glass Bottles and Jars

The glass container industry is an extremely old one which has, however, undergone a series of basic changes in the past 30 years, reflected both in the manner of production and in the manner in which packages are produced and designed. Some segments of the industry still operate under the age old hand methods, producing fine quality, highly specialized containers—generally for the cosmetic and related industries. This type of container is treated in this Catalog in a separate article starting on page 261.

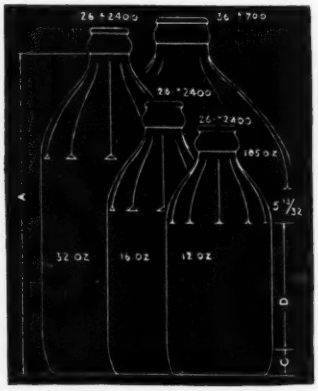
On the other hand, the major portion of the glass industry produces its products in highly mechanized, virtually automatic plants, where mass production permits of low cost, uniformity and volume delivery. Even within the automatic production division of the field, further specialization exists. Some equipment is particularly suited to the production of wide mouth containers, other equipment better suited to the making of pressed ware or narrow mouth bottles. In respect to the companies operating in the glass field, specialization may or may not be maintained. Some companies make only one general type or classification of containers. Others are equipped with production facilities to make several or all types. The packager's first decision, therefore, in seeking a source of supply, must be the determination of the type of container, since type tends to determine possible sources of supply.

We are particularly indebted to Frazier Smith of the Hazel-Atlas Glass Co. for aid in the preparation of the section of this article devoted to the design of glass containers; to the Glass Container Association of America for general aid in the preparation of this article and to T. K. Almroth of the Owens-Illinois Glass Co. for aid in the preparation of the section on colored glass and glass decoration.

Types of Containers

Glass containers may be classified by several criteria. The glass container industry has promulgated the follow-

Cross References: Hand Made Glass Bottles, page 261; Primary and Secondary Closures, page 263; Closure Linings and Sealing Compounds, page 284; Glass Finishes for Closures, page 295; Glass Vials, Tubes and Ampoules, page 297; Bottle Cleaning Equipment, page 388; Filling Liquids and Paste, page 396; Capping and Sealing Equipment, page 402; Labeling Machines and Devices, page 420; Shipping Methods and Consideration, page 512.



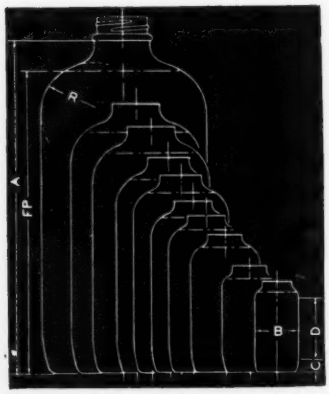
G.C.A Standard Round Stubby Juice Bottle. Bottles may be made with any suitable G.C.A. glass finish, neck and shoulder contours to meet requirements of particular finish used.

Body of bottle may be made plain or decorated. Decorations exceeding .024 depth not considered good practice. Recommended that bottom of bottle be stippled.

Tolerances: In accordance with G.C.A. No. 1 standard.

G.C.A. Standard Round Stubby Juice Bottle

Capacity	Weight	Overflow Capacity	A	C	D
Fluid Oz.	Max.	With Finish Shown			Str. for Label
8 oz.	6 oz.	8 5/8 oz.	5 5/16	1 1/16	2 15/16
12 oz.	8 oz.	12 3/4 oz.	6 1/16	3/4	3 5/16
16 oz.	9 3/4 oz.	17 1/4 oz.	6 11/16	1 3/16	3 5/8
24 oz.	12 3/4 oz.	25 1/2 oz.	7 11/16	1	4 3/16
32 oz.	16 oz.	33 7/16 oz.	8 5/8	1 1/8	4 3/4
105 oz.	32 oz.	105 oz.	9 15/32	1 7/16	4 3/16



G.C.A. Standard Boston Round Bottle. Available in capacity from 1/2 oz. to 32 oz.

Bottle may be made with any suitable G.C.A. glass finish or with cork finish.

Weight, height and body dimensions are ideal and should be maintained subject to G.C.A. No. 1 standard tolerances.

Body of bottle must be of round cross section and perfectly plain.

Neck sizes are nominal and subject to changes to conform to standard practices of individual manufacturers.

G.C.A. Standard Boston Round Bottle

Cap.	Weight	FP	A	B	C	D	R_1	Finish Size	No. Cork Size
Fluid Oz.		Inches Up				Flat Space			
1/2 Oz.	1 3/16 Oz.	1 13/16	2 1/16	1	1 1/32	1 11/32	1 7/64	18-400	#2 Regular
1 Oz.	1 1/4 Oz.	2 1/8	2 13/32	1 1/4	3/8	1 17/32	2 3/64	20-400	#3 Regular
2 Oz.	2 1/16 Oz.	2 13/16	3 3/32	1 33/64	3/16	2	1 5/32	20-400	#3 Regular
3 Oz.	2 3/4 Oz.	3 3/16	3 1/2	1 23/32	1 3/32	2 5/16	3 3/64	22-400	#4 Regular
4 Oz.	3 1/2 Oz.	3 15/32	3 27/32	1 57/64	1/2	2 1/2	3 7/64	22-400	#4 Regular
6 Oz.	4 9/16 Oz.	4	4 27/64	2 9/64	9/16	2 29/32	4 1/64	24-400	#5 Regular
8 Oz.	5 3/4 Oz.	4 1 1/32	4 27/32	2 1 1/32	1 9/32	3 3/16	2 3/32	24-400	#5 Regular
12 Oz.	7 3/4 Oz.	4 15/16	5 17/32	2 1 1/16	2 1/32	3 13/32	1 5/16	28-400	#7 Regular
16 Oz.	9 13/16 Oz.	5 2 1/64	6 3/64	2 5 9/64	1 1/16	4 1/16	1 5/16	28-400	#7 Regular
32 Oz.	16 1/8 Oz.	6 2 1/32	7 1/2	3 4 3/64	3/4	5 1/8	1 1/32	33-400	#8 Regular

ing general classifications and this terminology is utilized in the trade:

1. Narrow neck food containers
   This classification includes the following glass containers:—Catsup, chili sauce, cider (non-carbonated), clam juice, coffee (liquid), condiments, cruets, fountain concentrates, grape juice (non-carbonated), loganberry juice (non-carbonated), orange juice (non-carbonated), oyster cocktail, pectin, prune juice (non-carbonated), salad dressing, spices (liquid), syrup, table sauces, tomato juice, vinegars.

2. Wide mouth—food containers and jars
   This classification includes the following glass containers:—Anchovies, candies, caviar, celery salt, chop suey (not sauce), coffee, crushed fruits, horse radish, jams, maraschino cherries, marshmallow cream, mayonnaise, mince meat, meats, mushrooms (not sauce), mushroom spawn, mustard, olives, onions, peanut butter, pickles, preserves, relish, salad dressing (w/m jars only), salt and pepper style shakers (for packers use), sea foods, soups, spaghetti, sugar, vegetables.

   Included in this classification are also any other wide mouth jars or containers which are used by packers for condiments and food products not specifically mentioned in the group of products which are herein listed.

3. Pressed—food ware
   Same as 1 and 2 not including domestic jelly glasses.

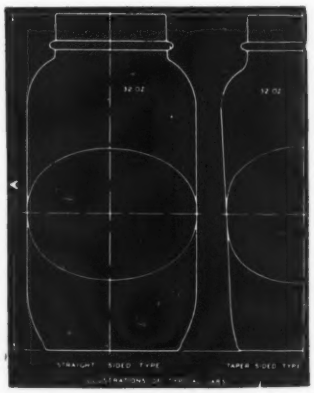
4. Pressure and non-pressure ware
   This classification includes the following glass containers:—Chocolate milk drinks (beverage style containers), ginger ale, water (carbonated), water (non-carbonated), siphon bottles, soda, soft drinks (non-carbonated).

   Special note should be taken that this classification does not include fruit juices, beer, wines, cordials, champagne, gin, whiskey or any kind of alcoholic liquor or beverage.

5. Beer bottles
   Includes all bottles to be used as containers for beer, ale, porter and all other alcoholic cereal beverages bottled under carbonation. This classification not only covers the generally accepted beer style container, but also any other style of container used for products as explained under this caption.

6. Liquor ware
   This classification includes the following containers:—Benedictine, bitters, brandies, champagne, cordials, Crême de Menthe, flasks (for alcoholic beverages), gins, rum, vermouth, whiskeys, wines.

Below and on the opposite page are four of the many Glass Container Association specifications for families of bottles and jars.



G.C.A. Standard Oval Wide Mouth Food Jar. Jars may be made with any suitable G.C.A. glass finish provided maximum finish as specified is not exceeded.

Jar weight may be adjusted to suit manufacturing conditions provided maximum weight as specified is not exceeded.

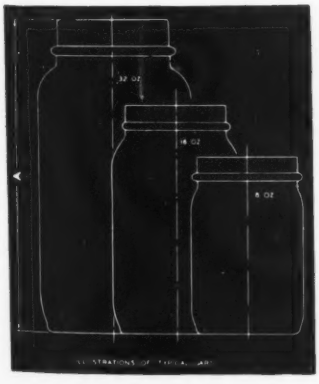
Body of jar must be oval or oblong cross section and may be plain or decorated. Decoration exceeding .032 depth not considered good practice.

Tolerances: G.C.A. No. 1 standard.

G.C.A. Standard Oval Wide Mouth Food Jar

"Odd sizes also included in specification up to 66 fluid oz."

Capacity	Overflow Inc'l	Overflow Not Inc'l	Weight	A	Finish
Fluid Oz.	Fluid Oz.		Max.	Max.	Max.
4	3¾	4¼	4¾	3⅞	53 mm.
4½	4¼	4¾	5¼	4	53 mm.
5	4¾	5½	5¾	4¼	58 mm.
6	5½	6½	6¾	4⅝	63 mm.
7– 8	6½	8½	7¾	5	63 mm.
9–10	8½	10½	8½	5¼	63 mm.
11–13	10½	13½	9¼	5½	63 mm.
14–15	13½	15½	10¼	6	70 mm.
16–17	15½	17½	11	6¼	70 mm.



G.C.A. Standard Plain Round Wide Mouth Food Jar. Jar may be made with any suitable G.C.A. glass finish provided maximum finish as specified is not exceeded. Jar weight may be adjusted to suit manufacturing conditions provided maximum specified is not exceeded.

Body of jar must be of round cross section and may be plain or decorated. Decoration exceeding .032 depth not considered good practice.

Tolerances: G.C.A. No. 1 standard.

G.C.A. Standard Plain Round Wide Mouth Food Jar

Capacity	Overflow Inc'l	Overflow Not Inc'l	Weight	A	Finish
Fluid Oz.	Fluid Oz.		Max.	Max.	Max.
4	3¾	4¼	4½	3⅜	53 mm.
4½	4¼	4¾	5	3½	53 mm.
5	4¾	5½	5½	3¾	58 mm.
6	5½	6½	6½	4⅛	63 mm.
7– 8	6½	8½	7¼	4½	63 mm.
9–10	8½	10½	8	4¾	63 mm.
11–13	10½	13½	8¾	5	63 mm.
14–15	13½	15½	9½	5½	70 mm.

"Also available in capacities up 107 oz."

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Also includes all alcoholic liquors and beverages except beer, porter, ale and other alcoholic cereal beverages bottled under carbonation.

7. Medicinal and toilet ware

This classification includes the following glass containers:—Acid bottles (not including 5- and 10-gal. carboys), argyrol, bath salts, bay rum, brilliantine, capsules, castor oil, chemicals, citrate of magnesia, cod liver oil, cosmetics, cuticle oil, cuticle remover, deodorants, dentifrice, druggists prescriptions ware, embalming fluid, essential oils, face creams, flavoring extracts, hair tonics, insecticides, iodine, liniments, lotions, merchurochrome, mouth wash, nail polish, nursers, perfumes, peroxides, pharmaceuticals, proprietary medicines, pomades, sachet, serums, shampoos, shaving cream, smelling salts, soaps, spraying machine jars, sterilizers, tablets, talcum powders, toilet preparations, toilet waters, vaselines and witch hazel.

Included in this classification are also any other containers manufactured for products not specifically mentioned in this list which, however, because of their general character belong to this group.

8. General purpose containers

This classification includes the following glass containers:—Ammonias, artists' colors, battery jars, bluings, carboys (5-gal.), carboys (10-gal.), cement, cleaning fluids, dyes, fire extinguishers, floats, floor wax, flower pots, glue, inks, linseed oil, mucilages, oil dispensing bottles, oil stove reservoirs, pantry jars (not packers' ware), paints, polishes, refrigerator bottles (not packers' ware), sewing machine oil, shakers (for table use only), shellac, soap dispensing globes, stain, table cream jars (1-oz. and 2-oz.), turpentine, varnish, washing fluids.

Includes all other miscellaneous items which cannot be classified in any of the other eight classifications listed.

9. Milk bottles

This classification includes the following glass containers:—Cottage cheese jars, cream bottles, milk bottles, milk shape liquid malted milk or chocolate milk bottles used by dairies.

The following containers should be excluded from the milk bottle classification:—Narrow neck or soda style bottles used by dairies or soft drink bottlers for liquid malted milk or chocolate drinks. (see beverage). Infants' nursing bottles (see medicinals and toilets). Jars used for malted milk or other milk products in powdered or granular form (see wide mouth). 1-oz. and 2-oz. table cream jars (see general purpose). Mushroom spawn bottles (see wide mouth food classification under beverages).

10. Domestic fruit jars

To include all wide mouth containers to be used for home preserving of fruits and vegetables Does not include packers' ware for packaging commercial products and which can be re-used in the home for domestic purposes after the package has been emptied of its contents.

11. Domestic jelly glasses

To include all jelly glasses to be used for home packing Does not include packers' ware for packaging commercial products.

The second form of classification, of particular interest to the packager unfamiliar with the glass field, is that which draws a distinction between stock molds and private molds For purposes of definition, there are three such types, as follows:

Stock and Private Containers

A. Stock containers. These are types usually ordered in relatively small quantities and hence made up for warehousing in advance of receipt of orders by the glass manufacturer. Many pharmaceutical and cosmetic types fall into this category.

B. Stock mold containers. Containers manufactured on order from molds owned and prepared in advance by the glass supplier and available, generally, to all purchasers who wish to use them. There are many thousands of such stock molds in existence, including specialities of every sort and many of the most familiar wide mouthed and narrow mouthed package lines. In many instances, such molds are exclusive with a single company. In other instances, virtually identical molds exist at several sources of supply, having been manufactured in conformity with specifications set up by the Glass Container Assn., a cooperative organization sponsored by the glass manufacturing industry.

The use of stock mold containers does not condemn the packager to uniformity of package appearance with every other manufacturer choosing to use the same stock mold. This is true because the glass container is only a part of the completed package and individuality may be secured, in spite of the use of identical glass containers, through differentiation of supplementary package parts such as labels, closures, cartons, etc. Further differentiation may, in some instances, be secured through change in the surface decoration molded integrally with the glass container itself. Thus raised surfaces, stipplings, lettering and similar effects may be secured on containers of which the basic shape is governed by the existence and use of stock molds.

C. Private mold containers. These are packages

designed especially for the use of a single company. Molds are here manufactured as part of the process of creating the bottle. Packagers desiring to use such private molds are well advised if they consult, in advance, with their glass suppliers and maintain a very close relationship between their own designers and those of the glass company who are acquainted with the ins and outs of glass making techniques and are thus equipped to render advice which will insure a container practical to produce, to fill and to use.

While glass production equipment is able to work within amazingly wide limits of design, certain types of design are far more economical to produce and far more stronger and useful in both the factory and the home than other types. Advance consideration of these many factors, through consultation with glass suppliers, can avoid the cumulative expense and trouble involved when a less practical form of container is designed.

Design of Glass Containers

Mechanical operations, through which a glass container must pass, impose numerous limitations on the firm and design of the container. These operations consist usually of filling, capping, labeling and cartoning in that order. A mechanical cleaning sometimes precedes the filling and other operations.

The bottle or jar which is easily upset on the shelf or table is doubly certain to cause trouble on a moving conveyor. Shapes tapering to a small bottom are top-heavy and tend to push each other over when a series of them are propelled by pressure of those which follow. On the other hand, a shape tapering from small top to large base often presents a problem in breakage, due to the single point of contact with the container next in line.

The jars or bottles usually move along the conveyor

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1. A striking example of the extent to which tradition governs color in bottles is the champagne bottle which is a special green bottle today just as it has been through the centuries. Photo courtesy Owens-Illinois Glass Co. **2.** Four dropper bottles of identical shape and size made in amber, green, blue and clear flint to comply with various pharmaceutical traditions and to aid consumers in identifying different products on the home medicine shelf. Photo courtesy Pennsylvania Glass Products Co. **3.** The modern pharmacist packages his prescriptions in bottles and jars of emerald green, colorless flint and amber. In general, emerald greens are preferred by custom for ointments and salves, capsules and tablets are packaged in amber bottles, while powders and colorful liquid medicines most generally go into flint bottles.

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4-5. Applied color lettering enables the bottle maker to decorate a bottle or jar with the crest, trade name or other inscription desired by the packer or bottler. The color is fused into the glass. Photos courtesy Owens-Illinois Glass Co.

in end-to-end position and depend on the contact of the sides with the guide rails to keep them properly aligned. Oval shapes with narrow ends tend to turn and wedge together. The best shapes, then, for fast and economical conveyance are those with round, square, rectangular or relatively flat-faced oval plans (in that order of preference) with straight vertical sides.

The manual placing of the container on the conveyor presents a problem relating to the labeling operation. The design should be such as to present no option to the operator or no room for a choice as to which way the containers should be placed. A serious detriment to efficient operation exists where the operator must face each container in a certain way.

Here the ideal is a round shape, either undecorated or with the ornament running horizontally above or below the label space. Next best is the square with all four sides equally suitable for labeling.

Almost as satisfactory is the rectangle or oval with decoration either on the ends or so placed that it will not interfere with the labeling of either side. The worst possible condition from this point of view is one which requires spotting a label on a round jar. Almost equally poor is the square or rectangular plan on which only one face is designed to accommodate the label.

Fast and efficient filling depends on two factors. First, a finish and neck, if any, of sufficiently large opening to permit the admission of the filling tube. Variations in the inside dimensions of blown glass containers are unavoidable, but proper design will help keep these variations within workable tolerances. Planning the finish of sufficient size and avoiding long necks, with their tendency toward what is technically known as "choking," will eliminate trouble at this stage.

Colored and Decorated Glass

Long established customs have had much to do with the fact that colored glass containers are used by many packers, bottlers and pharmacists for the packaging of their wares for the retail trade. In many cases, an individual company originally decided upon a container of a certain color because of its attractive appearance and once the decision had been made, spent a great deal of advertising money to bring his packaged product to the attention of the trade.

Thus in many cases the package is as well known as its contents. In this connection, typical examples which may be mentioned are such well known names as Coca-Cola in its special green glass bottle, White Rock carbonated water in its traditional amber bottle, Canada Dry Ginger Ale in its emerald green bottle and Canada Dry Sparkling Water merchandised in the famous stippled flint glass bottle.

In the pharmaceutical field, the custom of accepting a given color for various products is even more general. Thus we have become accustomed to buying milk of magnesia in blue glass containers while green containers are widely used for ointments. Amber glass containers, on the other hand, are most generally used for tablets marketed by the pharmaceutical industry.

The use of special colors of dark green, light green and champagne green in the wine industry is a typical example of a custom established by long tradition. No doubt the colors for the various types of wine bottles were adopted because colored glass happened to be available in the districts where the wines were first made. As time went on, the customers became used to buying their favorite wine in bottles of a certain color and the color continued to be used as the industry progressed.

It is difficult to change over a glass furnace from one color to another without literally rebuilding the entire furnace because the molten glass permeates the fire brick. Thus, most companies devote an entire furnace to each of the colors they produce and production capacity is, therefore, less flexible than in the case of flint glass—colorless glass.

Glass Decorations

In recent years, new methods for decorating glass containers have been developed which have widened the usefulness of these types of packages. Certain types of decoration may be formed integrally with the container in the form of various raised or depressed surfaces, flutings and moldings. Color decoration may likewise be applied in several ways.

Cold colors, on occasion, are painted or silk-screened onto glass containers either as overall colors or to achieve desired design decorations. Finally, several methods have been brought to a high degree of perfection for the application of colors to glass (and to plastics and ceramics as well) which are fused in by firing and become a part of the package itself. Such fused-on colors may be utilized to form "labels," thus eliminating a separate applied label. They may also be used as decoration, pure and simple, as in the case of the familiar cheese tumblers where the glass container is given a high premium value, encouraging resale, through the use of fused-on decoration. The permanence of such decoration is likewise important in the re-use container field where it eliminates glued labels and the application of new ones.

Gloss colors for use over glass are a combination of a flux or low-melting glass (80–90 per cent) and a pigment or ceramic color. Most of these colors have been evolved since 1910. The first colors developed were soft and lacking in flux resistance. Only within the past five years have resistant colors been developed. The first of these were used on milk bottles and required a temperature from 1070 to 1100 deg. F. to develop gloss.

The new super-resistant colors stand up under conditions which would destroy ordinary color. They are far more resistant to sunlight, acid, vinegar, sulfides in air and food, alkaline detergents and hot water than the colors formerly available and used for glass. They are available in practically all shades in a full range of brilliant colors—red, orange, yellow, blue, green and violet. All degrees of pastel colors down to very pale tints are used in spray operations, usually to cover the entire surface of the container.

In the application of ceramic colors to glass, considerable progress has been made. Machines are now in use which will band from two to eight colors simultaneously and several times faster than previously obtained by hand. Spray guns have been modified to give much greater speed, lower color loss and to do specialty designs as well as the conventional all-over spray. Silk-screen stencils, mechanically operated, have recently come into wide usage and are now employed to print from one to five colors on the glass surface.

Hand Made Glass Bottles

The vast majority of all bottles used today are manufactured on automatic machinery. Glass is made in huge furnaces with materials being mixed by the ton. Molten glass is fed into huge automatic machines and blown accurately to conform to the shape of the molds within the machine. However, the ancient art of glass making still occupies a prominent—and in some respects an increasingly important—place in the packaging picture.

Where extremely fine work is essential and where limited runs of such work are required, hand made and semi-hand made glass containers are widely used. Such containers are particularly applicable in the perfume, talcum, bath salts, prescription, wine and liquor trades.

Until the start of hostilities in Europe, a limited quantity of French, Australian and Czechoslovakian glass falling in these categories was imported each year. Since September, 1939, however, American manufacturers of hand made glass have shown their ability to meet all the needs of the market and virtually no dislocations have occurred due to the cutting off of foreign imports. In fact, the probability may now be clearly seen that no extensive import trade will find a basis for existence after the cessation of hostilities, since domestic producers have so clearly demonstrated their ability to successfully meet domestic requirements.

Acknowledgment is made to J. J. Jeffries, Swindell Bros., Inc., and Carl L. Hilgenberg, Carr-Lowrey Glass Co., for aid in the preparation of the material upon which this article is based.

The Hand Made Process

In making a bottle by the hand made process, the glass blower inserts the blowpipe, an instrument about 4 ft. long, into the pot of glass and withdraws a sufficient amount for the bottle, at the capacity required. A hand skilled in feeling the weights is imperative as too much glass would decrease the capacity of the bottles, while too little would increase the capacity, besides making it too frail for average handling.

The glass is then rolled on a smooth flat surface to eliminate any wrinkles that may have formed while the

Cross References: Procedure in Design, page 6; The Food, Drug and Cosmetic Act, page 20; Glass Bottles and Jars, page 256; Glass Finishes for Closures, page 295; Glass Vials, Tubes and Ampoules, page 297; Bottle Cleaning Equipment, page 388; Filling Liquids and Pastes, page 396; Capping and Sealing Equipment, page 402; Labeling Machines and Devices, page 420.

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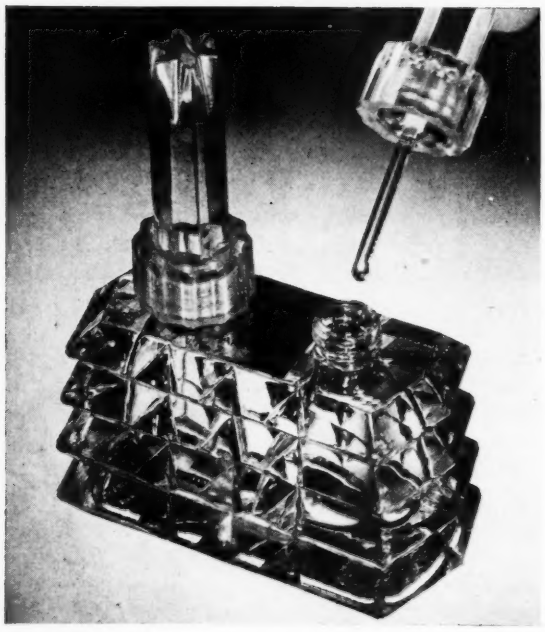

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1. Hand made bottles equipped with threaded closure finishes to accept decorative metal closures. **2.** Hand blown bottles with ground glass stoppers likewise hand made. **3.** A two-cavity hand blown bottle with dual closure finishes and plastic closures. Photos courtesy Carr-Lowrey Glass Co.

glass was being taken from the pot, leaving an almost perfect piece which is placed in an iron or steel mold. The mold is made in two parts, each containing a cavity of a size equal to half the size of the bottles with a bottom plate for a base.

When the mold is closed around the glass, the blower blows sufficient wind through the pipe to spread the glass evenly against the walls of the cavities, forming the bottle. The mold is opened immediately and the bottle is taken out with pincers, weighed and the necks reheated so a smooth mouth opening and a proper finish can be formed with a tool.

If the bottles are allowed to cool rapidly, they become extremely brittle, causing them to break from the least vibration, so they are placed in slow moving lehrs that cool them gradually, giving them the proper temper.

The bottles that pass inspection have their stoppers ground-in and tied onto the necks to insure against the possibility of stoppers being interchanged, as this would cause leakage and evaporation when the bottles are filled with perfume.

While this description of the process is basic, it is susceptible to virtually infinite variations to meet the very specialized requirements of differing designs. For instance, hand made bottles with threaded necks have recently been placed upon the market. These necks are made accurately in accordance with Glass Container Assn. specifications to accommodate standard, metal or plastic closures. Thus the container partakes of the advantages of the hand blowing process, while at the same time achieving a uniformity of closure finish which is most commonly associated with the automatic glass producing equipment.

Glass for hand made bottles is usually made of very carefully selected and blended materials fused in small batches in covered pots free from the impurities of factory air. Extremely delicate and sparkling effects can be achieved because of the high quality of the glass utilized, as well as because of the interesting effects in design attainable by hand blowing.

The cost factor as between stock mold containers and private mold containers differs in the hand blown field from the situation to be found in the machine blown bottle industry. Since only one mold is used per blower and since hand blown bottles are produced in relatively short runs, mold costs for private mold bottles are generally lower when hand blowing is contemplated. This factor, however, would seldom be the deciding element in tipping the scales one way or the other as between hand blown and machine made containers.

Primary and Secondary Closures

Closure performance determines, to a large degree, the success of a glass container. It is the consumer's means of access to the product and the manufacturer's assurance that the quality he packaged at his factory is still intact. Hence, in determining the selection of closures for his packages, the product manufacturer will be guided by replies to the following questions: Is the closure easy to remove? What is the condition of the product—does the closure keep it in factory-fresh condition? Is the closure easily replaced—does it provide a convenient and efficacious re-seal for the package, if such is needed? Does the seal protect the product against tampering?

The most reliable method of selecting a closure is to choose one, within the proper price range, that can be depended upon to provide the utmost in package attractiveness, secureness of seal and convenience of use for each specific product. The ingredients of the product and the market in which it sells will, to some extent, determine the type of closure to be used. Therefore, it behooves every manufacturer who is engaged in the packaging of a product that requires sealing in a bottle, jar or can to carefully study, test and compare the seals and methods before adopting any, remembering that the sealing material—cork, metal, lacquer, liners or sealing gaskets, glassware—as well as the product to be sealed must be given full consideration.

Because of its efficient sealing qualities, as well as modern manufacturing innovations in shaping cork into many practical forms, cork remains one of the popular and dependable present-day closure materials. The three other principal materials are metal, plastics and paper, the volume used being, roughly, in the order in which these are listed. Each is ideal for certain products and under certain circumstances and none are to be considered as mere substitutes for any other, but, rather, as closure materials in their own right.

Components of Closures

The elements included in a closure (other than that provided by a cork) are the following:

1. The cap itself, which consists of a shape or form made of tin-plate, plastic compound, aluminum, brass, paper, gelatine, cellulose, tin or aluminum foil.

2. The liner or gasket, which provides the sealing medium, may be either a rubber compound gasket for hermetic sealing or a combination disc insert liner for products not requiring an hermetic seal. The combination disc insert liner usually consists of two parts—the outer facing, chemically inert to the action of the product, and a backing material.

3. The thread or lug construction of the cap by means of which it engages threads or lugs on the glass container.

4. The decoration, by which the packer or manufacturer is enabled to:

(a) Dress up and give his packages individuality, distinctiveness, eye-appeal and added color.

(b) Advertise and emphasize his trade name or mark, his organization, a group of products, the general quality of his products, a trade character or a slogan.

(c) To properly instruct the user on the storage of the product, its preparation, use, service and directions for opening, etc.

(d) Encourage the wider use of the product through recipes and new uses.

(e) Cross-advertise and encourage the use of other products which he produces.

(f) Permanently identify powerful or poisonous drugs in case the paper label should become soiled, torn or lost.

(g) Identify certain ingredients to be mixed with others.

(h) Offset the need and expense of labels, or to otherwise replace them where the size or shape of the containers, or the method of storing or handling them, prohibits the use of labels.

General Classification of Closures

Closures may be divided into the following general classifications: Single-seal closures, re-seal closures, special closures and secondary closures.

Single-seal closures for glass containers are those primarily intended to protect and enclose the product in its container until it reaches the consumer—in effect, a "single seal" is accomplished. Once opened, however, the value of the closure is not destroyed for the cap can be used, in most instances, as a protection against dirt, dust or other contamination.

Used only on tin containers are several types of single and re-seal closures, such as screw caps, friction tops, locked-slip and draw-slip covers, as well as those seals which are reamed or clamped on.

Re-seal closures are usually of the C. T. (continuous thread), interrupted thread, lug, friction or pressure types. As indicated by their designation, they are used where a secure re-seal is desired, although after they are

Cross References: Merchandising Considerations, page 11; Production Considerations, page 13; Paper Containers for Liquids, page 90; Tin Packages and Cans, page 232; Aluminum Containers and Vials, page 244; Collapsible Metal Tubes, page 250; Glass Bottles and Jars, page 256; Closure Linings and Sealing Compounds, page 284; Glass Finishes for Closures, page 295; Glass Vials, Tubes and Ampoules, page 297; Plastics for Packaging, page 318; Capping and Sealing Equipment, page 402; Types and Functions of Adhesives, page 474.

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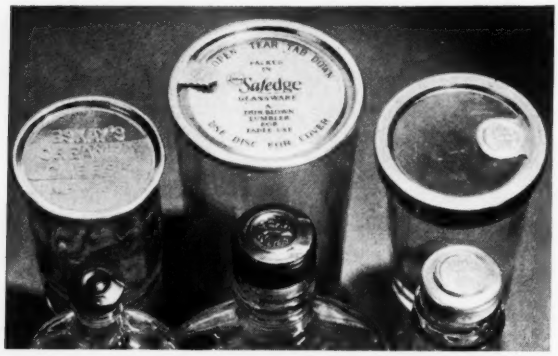
once opened there is no protection of the product from atmospheric effects.

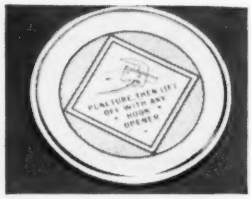
Secondary closures are those which are used to supplement other closures, either to obtain additional protection for the product or for decorative purposes. These may be variously classified as cellulose and gelatine caps, film seals and foil hoods. Cellulose and gelatine caps are supplied by the makers in dry form or immersed in a solution which enables them to be stretched by hand over the primary closure. In drying, these shrink and thus provide a decorative cover over the seal and also help to make the seal more air-tight. Obtainable in colors and in special designs with lettering or trade marks, these closures are of further help in creating individuality for the package. Film seals are placed directly over the openings of bottles or cans and, in conjunction with the main closure, also aid in effecting a seal. Foil hoods or caps, most frequently used on wine bottles, are placed over the tops and extend part way down the necks of the bottles, usually being squeezed on to assure adhesion.

Under *special closures* may be listed a great number of designs, patented and otherwise, which serve particular purposes in convenience and protectability. During the last few years, many special closures have been developed for use in the liquor field, such as tamper-proof, pouring and measuring caps. Likewise, in the food and drug fields there have been many modifications of standard type caps which permit greater convenience to the consumer of the packaged products.



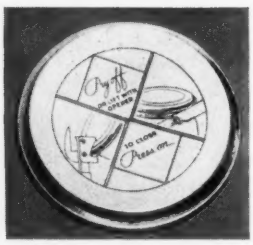
1. Upper left: Alseco foil tumbler cap. Crimped on. Also available in sifter (perforated) type. **2.** Upper center and right: Vacuum caps with tear-off tabs. Top seal; two tabs may be provided. Aluminum or tin. **3.** Bottom: Goldy seals. Tear-off: aluminum. Top seal.

4. Top seal for thin tumblers. Vacuum. Whitecap.

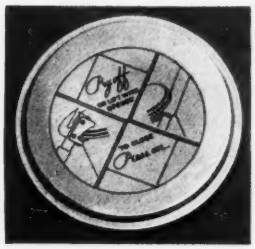


5. Anchor T cap. Side seal; air-tight or vacuum.

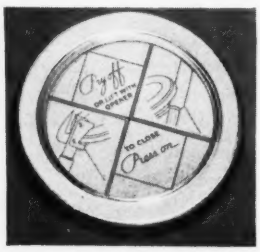
6. Anchor D cap. Side seal; air-tight or vacuum. For jars, bottles and tumblers.



7. Anchor F cap. Side seal; pry off. Air-tight or vacuum. For jars, bottles and tumblers.



8. Anchor K cap. Side seal; pry-off type.



9. Anchor Pilot cap. Side seal; pry-off. Vacuum.

Single-Seal Closures

Single-seal closures are usually constructed of a single piece of metal, principally tin-plate, although aluminum is used for some. All, with the exception of Nos. 1, 3 and 16, use rubber sealing gaskets to effect their seal. Some of these caps make their seal on the side of the container finish, others are known as top-seal caps and make their seal on the top of the finish. Certain single-seal closures, of course, permit re-use as cover-caps although where these are vacuum-sealed, the original purpose is destroyed once the cap or closure is removed.

10. Saniseal cap. A tin-plate crown cap, lined with waterproof paper for demijohns and unlined for milk bottles.

11. Seal-Kap sanitary re-seal cover for milk bottles and jars. Made of specially treated paper, plain or decorated.

Bottles
by Swindell

MACHINE MADE OR HAND MADE
PRIVATE MOULD OR STOCK

PREMIUM QUALITY - BUT
NOT PREMIUM PRICES

Write for designs and quotations
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When you think of bottles think of
Swindell

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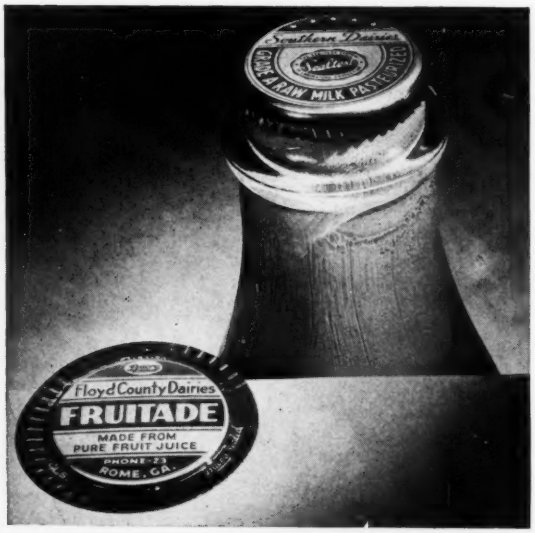
12. Left: Whitecap vacuum side seal for pry-off finish. **13.** Right: Whitecap vacuum deep top seal for pry-off finish.

14. Left: Whitecap double shell vacuum cap. **15.** Right: Band cap, two-piece vacuum.

16. Crown caps, designed primarily for sealing carbonated beverages and bottled and canned beer. Use liners of various types. Perforated top shown used for bluing, etc.



17. Dacro cap for milk bottles. Photo courtesy Crown Cork and Seal Co.

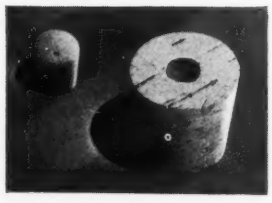
Corks—Standard Types

18. Champagne cork. For use with various types of champagne of foreign or domestic vintage. Made from selected and tested corkwood in two types, for first and final bottling.

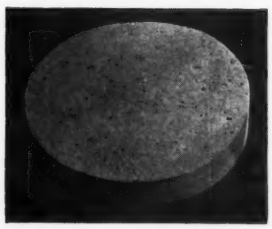
19. Left: A straight cork. For use in sealing still wines (dry and sweet). Oversize, and driven under compression into bottle. **20.** Right: Tap cork. Inserted in bushes in heads of kegs in cooperage factories or breweries.

21. Tapered cork. General-use closure for bottles, jugs, flasks, etc. Manufactured in a wide range of grades, tapers and sizes.

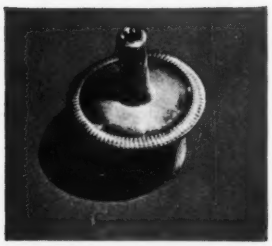
22. Wedge top cork. Ordinary tapered cork with formed top. Essentially a perfume or cosmetic container closure.



23. Left: Round top cork. Variation in shape of No. 22, with same uses. **24.** Right: Shell cork. Used with glass or fancy stoppers, with sprinkler tops and as orifice reducers.



25. Specie cork. Pores of corkwood run from top to bottom instead of through the diameter. For sealing laboratory glassware, certain dry chemicals and for mustard, horseradish, etc.



26. Sprinkler cork. Metal sprinkler inserted in shell cork. Used for dispensing liquids.

FEDERAL SPRAYERS and SERVERS SELL "HARD-TO-USE" PRODUCTS

Federal has applied their "closures with a function" to hundreds of packages of liquid and semi-liquid products—and in each case sales have been boosted. The two new additions to the Federal line—an all plastic, all colorful sprayer (comes as dispenser, too) of Tenite II; and the colorful Tenite II closure which makes an ideal dispenser for spices, flour, tea, coffee, salt, sugar with re-use as a cocktail shaker or beverage mixer—are displayed in the top two photographs.

•

Send us your product in its present container. We'll be glad to return it with an appropriate Federal "functional closure."

All plastic, all color Tenite II sprayer (may be had with dispenser tip, too). Consumers pick these colorful closures every time.

Unique Colorful Tenite II dispensing cap which is readied for market with application of simple liner. Cap for added convenience—and re-use as cocktail shaker.

Midway Chemical's "Aeromist" is finely sprayed through type SDS plunger.

This plunger Type RB Sprayer is used by Socony-Vacuum with their TAVERN window cleaner.

Sherfick Farms use the Deluxe No. 110 Server as "Closure Premium" for BEE HIVE Honey.

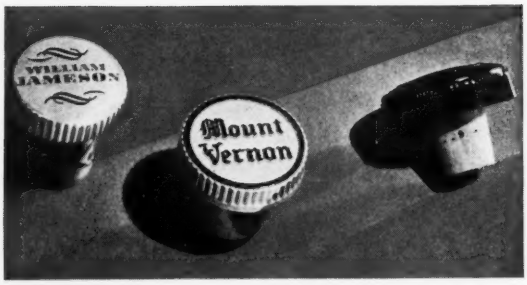
Natural Sugars uses No. 210 to build sales for its 100% Pure Vermont Maple Syrup.

FEDERAL TOOL CORPORATION

CLOSURES WITH A FUNCTION

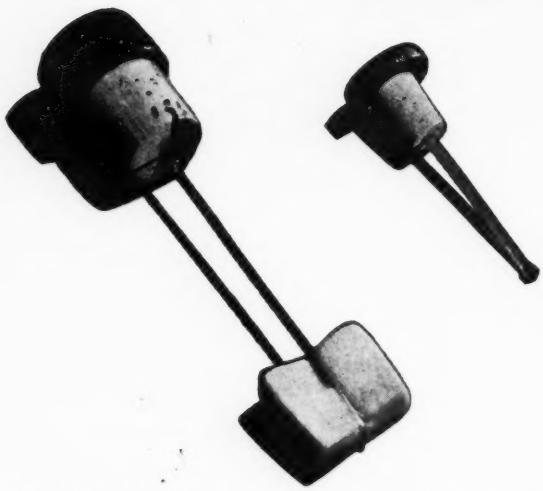
400 NORTH LEAVITT STREET - - - - - - - - CHICAGO

XUM

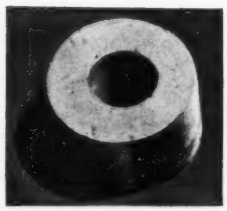


27, 28, 29. Topped corks are of three types and are widely used for sealing liquors, perfumes, essential oils, lotions, extracts, etc. No. 27 (left) shows molded plastic top attached to accurately cut cork; No. 28 (center), lithographed metal top cork; and No. 29 (right), embossed wood top cork.

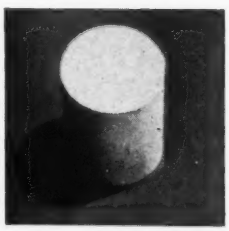
30. Flange cork. Flange facilitates removal of closure from bottle. For whiskey containers and for use with various types of tamper-proof outer seals.



31, 32. Dauber and applicator, respectively. Corks with wooden tops.



33. Orifice reducer. Shell cork which may be equipped with metal fitting and used to convert standard cork finish or screw finish into shaker type units for dispensing. Of particular value and use to manufacturers who do not have special vacuum filling equipment. No special equipment is necessary to apply orifice reducers to bottles.



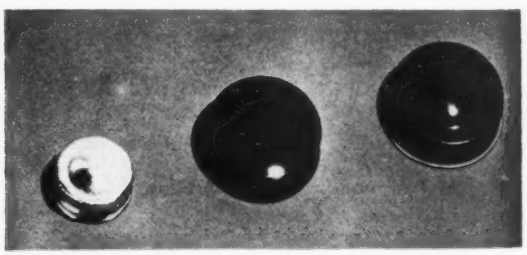
34. Rubber cork or stopper. Used for bottles containing ammonia, certain chemicals, etc.

Re-Seal Closures—Single Shell

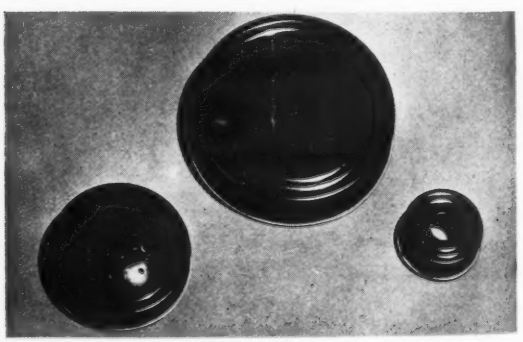
These are of the single shell, continuous thread (C. T.), screw type. Usually made of tin-plate; sometimes of aluminum. May be lithographed, embossed or perforated.

As with the single-seal closures, re-seal caps are provided with liners made of selected materials to meet given conditions. In the wide-mouth sizes, re-seal caps are used to seal such products as foods, candy, cosmetics, creams, ointments, etc. In the narrow-mouth sizes, they are extensively used for food products, pharmaceuticals, wines, liquors, cordials, drugs, cosmetics, glues, cleaning fluids, shampoos, pastes, shoe polishes, mineral and vegetable oils, etc.

35. Upper left: Flat top, rolled edge, no knurl. **36.** Upper right: Flat top, rolled edge, with knurl. **37.** Below, left: Full dome top, rolled edge, no knurl. **38.** Below, right: Flat top, no ring, no knurl.



39. Left: Part dome top, raw edge, with semi-knurl. **40.** Center: Full dome top, no knurl. **41.** Right: Standard dome, no knurl.



42. Left: Perforated top (partial dome), rolled edge, no knurl. **43.** Center: Flat top, rolled edge, with knurl, depressed ring. **44.** Right: Single perforation top, rolled edge, with knurl, depressed ring.

IT'S A HONEY OF A CLOSURE—
..... and now the price is down!

H-'mm, so you think this KORK-N-SEAL is the answer to our sealing problem, eh?
No doubt about it! And with that handy lever, we have a wonderful talking point with the trade. The cap is a natural!

TO OPEN—you simply raise the handy lever and the cap lifts right off.

TO RE-SEAL—replace the cap and press the handy lever down.

Is your product a hard one to hold in glass or tin? Let KORK-N-SEAL go to work for you. No matter how tough the assignment, KORK-N-SEAL will do a perfect sealing job. And with the new low prices, this unique closure is now available to hundreds of manufacturers who have to watch every item of cost.

For perfect sealing, easy opening, convenient re-sealing—for a much-needed talking point to stimulate your sales—use KORK-N-SEAL. It's the simple, but complete, answer to your closure problems.

WILLIAMS SEALING CORPORATION
DECATUR, ILLINOIS
Division of Crown Cork and Seal Company

MAIL THIS COUPON

WILLIAMS SEALING CORPORATION,
DECATUR, ILLINOIS

Gentlemen: Please send us samples, prices and full information on KORK-N-SEAL, the Cap with the Handy Lever.

Name .....
Company .....
Address ..... *State* PC-41
City .....

KORK-N-SEAL
THE CAP WITH THE HANDY LEVER

THESE NOTABLE CONTRIBUTIONS TO

CCS has never been satisfied merely to make closures at a price. Its constant aim has been to improve the sealing of glass packed products . . . to make *better* closures and to give users more value for their money.

A number of vital closure improvements have come from the CCS Organization . . . several of which have definitely revolutionized sealing methods. These improvements, together with CCS unvarying high standards of quality, have played a part in making glass packed products more acceptable in every American home.

Samples, prices and full information on CROWN CLOSURES are yours for the asking. Write us today.

CROWN CORK & SEAL CO., BALTIMORE, MD.

World's Largest Makers of Closures for Glass Containers

DEEP HOOK THREAD SCREW CAPS—Developed and patented by CCS, this improved under-gripping thread gave Crown Screw Caps such distinct superiority that all screw caps have been improved by the efforts of others to keep pace.

VPO CAPS—Vacuum Pry Off Caps offer an exclusive CCS system of sealing for ho packed products, combining an hermeti seal, with easy removal and re-sealing. VPO straight line capping machines are available. Speed of application is limited only by speed of filling equipment.

SLIP RU
gasket, vul
brought e
replacing t
products. S
naise, coffe
products.

You get them exclusively in

LUG CAPS—Made with the skill of acquired experience, CCS Lug Caps are welcomed by the housewife. The only Lug Caps which can be successfully lined with rubber rings for hermetic sealing. Slip Rubber Rings are used.

SHORT FRICTION CATSUP COVER CAPS—Another CCS innovation and contribution to lower packing costs. They fit securely—yet come off easily. Ingenious design gives them a tailor-made appearance which adds greatly to the attractiveness of the package.

DOUBLE SHELL CAPS—These popular caps combine good looks with dependable sealing. The two shells, inseparably locked together, have the patented Crown Deep Hook Thread and are coated with special alcohol-resisting lacquer. Available in any color or combination of colors.

CT CAP
highest sta
CCS Screw
exclusive
patented D

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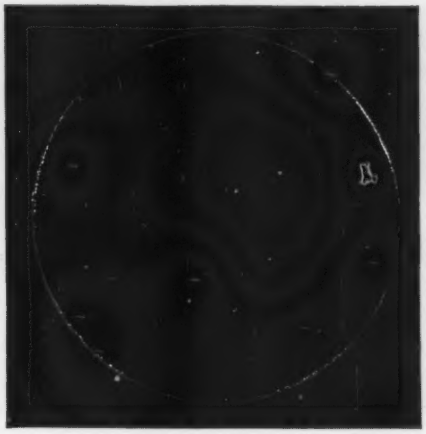
TO SEALING WERE MADE BY CCS

SLIP RUBBER RINGS—This sealing gasket, vulcanized into one piece caps, has brought enormous savings to packers by replacing two piece caps. For hot packed products. Special rubber formulae for mayonnaise, coffee and other hermetically sealed products.

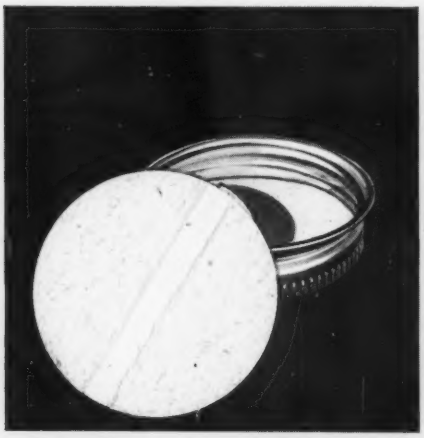


OROLAC LINER—Made by bonding "Orolac" coated foil to white pulp. Orolac is of attractive, clean appearance and provides a tight sealing liner for numerous products. Orolac is odorless and tasteless. It is also impervious to liquids and vapors.

PLASTIC LINERS—The secret of the high degree of efficiency of CCS plastic liners is in the blending of the truly plastic waxes used in the built-up surface. In sealing pickles, mustard, etc., its use is real insurance against shrinkage due to evaporation and against returned goods.

in CROWN CLOSURES

CT CAPS—Made in wide variety to the highest standards of accuracy and uniformity, CCS Screw Caps also have a number of exclusive advantages resulting from the patented Deep Hook Thread.



VENT CAPS—A patent-applied-for closure liner for relieving gas pressure developed within sealed glass containers. Supplied in aluminum caps for bleach solutions, and in tinplate caps for non-corrosive products.

MASON CAPS—Available in one piece and two piece types. These caps have the famous Deep Hook Thread construction which insures faster application—effective sealing without wedging—and, consequently easy removal.

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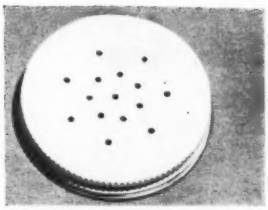
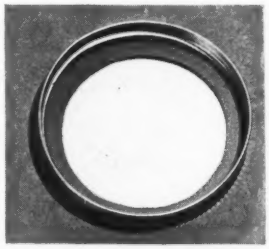


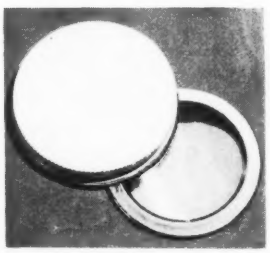
45. Perforated top (flat), rolled edge, with knurl.



46. Flat top, rolled edge, with knurl, depressed ring, gasket lined. Illustration shows under side to indicate placing of gasket.

47. Partial dome top, rolled edge, with knurl, decorated.

48. Unishell in which screw thread is formed from curled-under edge so that the peripheral side is flat. Decorated.

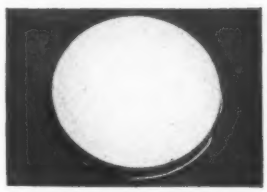


49. Two-piece single shell. The top fits snugly over a metal disk, on which is vulcanized the sealing gasket.

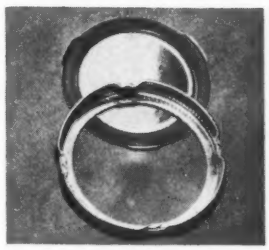
50. Roll on. An aluminum screw cap, the threads of which are formed on the container itself.

Single shell, re-seal caps, are also made in friction and lug types. In the latter case, the lugs are formed integral with the shell itself. Both types may be lithographed in plain colors or decorated.

51. Top: Anchor A Clipper. Pry-off friction cap. **52.** Center: Anchor R Clipper. Corrugated skirt, friction cap. Opened by flattening groove around side by tapping. **53.** Bottom: Anchor Halyard. Air-tight or vacuum seal. Removed with a lift opener (wire) integral with the container.



54. Anchor Amerseal. Lug cap with knurl. With flat, domed or perforated top.



55. Two-piece Amerseal, air-tight or vacuum seal.

56. Top: Uniplex. Single shell, lug cap with flat peripheral side. Under and top views. **57.** Bottom: Duplex. Single shell, lug cap with flat peripheral side. Decorated. Top and under views.

58. Gasket lined Amerseal, air-tight or vacuum seal.

59. Anchor Beacon. Lug cap with flat peripheral side. This illustration shows under view, revealing liner.

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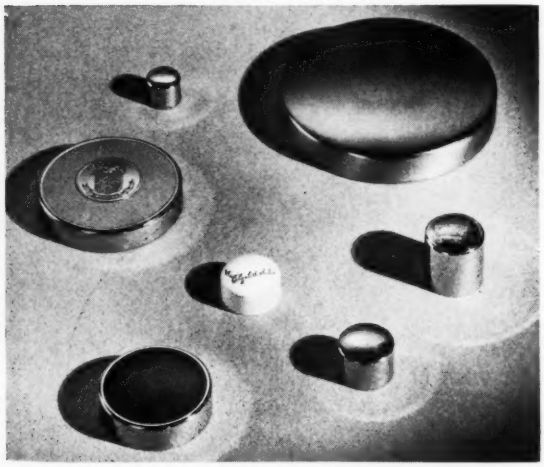
60. Sentry seal. Shown assembled and apart. Made of tinplate. A single shell, re-seal C. T. screw cap surrounded by a notched tab band. Band is broken by a pull on the tab.



61. Decoratively finished, close-fitting single shell closures with locking members concealed on the inside surface and invisible from the outside. The locking members are formed by shearing down and rolling a section of the metal shell wall. Photo courtesy Scovill Manufacturing Co.

62. V. P. O. (vacuum pry-off) cap. Vacuum top seal for pry-off finish. Indentations in the side of the cap also provide a mechanical lock to hold it firmly in place, thus making an air-tight and water-tight re-seal. Photo courtesy Crown Cork and Seal Co.

63. Screw and lug caps lined with patented slip rubber ring vulcanized into the caps. For vacuum seal and hermetic re-seal. Photo courtesy Crown Cork and Seal Co.

Re-Seal Closures—Double Shell

Illustrations on this and the next page, with the exception of No. 74, show general and special types of double shell caps. These are constructed with inner and outer shells tightly locked so that they have ample strength to withstand capping pressure. In double shell screw caps, the inner shell incorporates the screw thread, while the outer shell serves as a cover to the inner shell and presents side surfaces that may be smooth or indented, as desired, but free from the thread configuration of the average single shell cap. This feature is particularly desirable in certain packages where straight lines or uninterrupted surfaces are wanted for design purposes. Double shell caps are available in a complete range of standard sizes. A continuous screw thread is generally used, although there are several types of double shell caps provided with a form of interrupted thread.

64. Standard flat top, large size, double shell cap.

65. Left: Standard flat top, small size, double shell cap, showing under view with liner. **66.** Center: Upper view of cap No. 65. **67.** Right: Dome top, lithographed with trade name of product.

The *Only* Company of its kind

There are several can manufacturers. A number of companies make glass jars and bottles. But just one organization makes BOTH GLASS AND METAL containers—and that's Owens-Illinois.

If you market packaged products, this unique combination offers definite advantages:

At Owens-Illinois, metal and glass are not competitive but complementary—each a part of our full-rounded packaging service.

We give you impartial, sincere counsel on packaging your products for efficiency at your plant and sales-power at the point of purchase.

We can complete your packages with O-I molded-plastic and metal closures that win customers' thanks. What's more, we can deliver your containers in O-I corrugated shipping cartons.

To every Owens-Illinois customer we offer the services of the nation's most comprehensive Packaging Research Laboratory, fact-finder for both metal and glass. Our packaging specialists are as adept at solving filling-line problems as they are at designing sales-winning containers.

If you need the answer to any packaging question or want fresh ideas, it will pay you to ask us in.

OWENS-ILLINOIS

Packaging Service

GLASS CONTAINERS • METAL CONTAINERS • CLOSURES • SHIPPING CARTONS

Owens-Illinois Glass Company, Toledo • Owens-Illinois Can Company, Toledo
Libbey Glass Company, Toledo • Owens-Illinois Pacific Coast Company, San Francisco

Please Turn

Now Duraglas*...a New

Giving Greater Strength, Longer Li

In Duraglas, 50 centuries of glass making move forward in one giant step. For Duraglas is more than a material. Duraglas symbolizes the basic improvements which we have made in the ingredients of glass, and a host of technical advances in fabricating methods. Stronger, tougher, more durable containers are the immediate result.

Lightweight jars for vegetables and fruits. No. 10 jars and bottles for bulk foods and juices. O-I Oval and Modernistic jars, Duraglas coffee jars with home resealing cap.

A wide variety of stock shapes for tonics, shampoos, lotions, perfumes, tines, nail polishes, etc. Private-mold if you prefer.

What Duraglas* means in P

With the perfection of the Duraglas method, hundreds of products previously packed in other containers because glass was considered expensive will now go to market in sturdy, economical Duraglas containers. In the case of returnable containers . . . milk, beverage and beer bottles . . . Duraglas results in longer life and lower trip costs. In one-trip con-

All types of bottles for liquid and dry products. Also the most complete line of Prescription Ware—ovals in all sizes, powder and ointment jars, capsule and tablet vials, dropper services, etc.

Every type and size of glass dairy container, all with standard "finishes" . . . table creamers, large milk jugs, cottage cheese and sour-cream jars, orange juice and chocolate drink bottles. ACL, to give you an extra merchandising weapon.

Owens-Illinois makes your message designs, fused into the ture. Colorful the eye appe gives better sell your prod

Technique in Glass Making...

Lighter Weight to Glass Containers

Duraglas brings a new versatility to the package designer. For this new technique makes possible a new "architecture" of glass containers . . . alters all previous opinions of glass as a packaging material.

Duraglas is the trade-marked name of glass containers made by a new improved method developed by Owens-Illinois.

A wide range of sizes and shapes in bottles and jars for cleaning fluids, ammonia, polishes, wax, oils, paints, dry and liquid chemicals, etc.

Bottles of Unequalled Strength in all standard colors, shapes and sizes. Applied Color Lettering, fused into the glass, gives you brand identification . . . eliminates labeling.

Packaging the Nation's Products

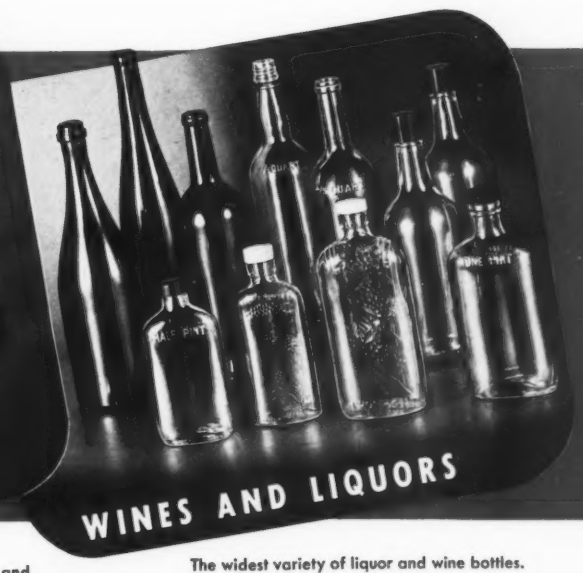
tainers, the strength of Duraglas makes possible lower weight, with resulting important economies. Where safe delivery of contents is paramount, Duraglas containers offer greater confidence. In short, a new and better SELLING way for industry to pack its products—THAT'S what Duraglas means to all America!

Applied Lettering

ed Color Lettering trademark or sales e container. ACL ceramic colors, are at high tempera- ecoration increases your container . . . in stores . . . helps

BEVERAGES

Complete line in wide variety of shapes and sizes. All standard colors. Or we will originate an unusual eye-catching bottle for your use. Colorful, long-lasting ACL, fused into glass, gives your bottles extra selling punch.



WINES AND LIQUORS

The widest variety of liquor and wine bottles. Plain "liquors" in quart, fifth and pint sizes. Correct shapes for port, sherry, claret, burgundy, sauterne, champagne, etc. Decorated gallon and half-gallon jugs. Scores of stock shapes.

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Owens-Illinois *Complete Packaging Service* includes:

TUMBLERS

SAFEDGE TUMBLERS . . . used as product containers or premiums, give you a powerful added selling force. The famous Safedge rim is guaranteed against chipping. Tumblers in standard sizes are colorfully decorated with Pinocchio and other Disney characters . . . artistic designs . . . or your own special decoration.

CLOSURES

LUSTRSEAL MOLDED . . . also METAL CLOSURES meet every requirement.

1. They help consumers use your product with convenience.
2. They provide sure seal and reseal.
3. They add to the attractiveness of your package.

Use Owens-Illinois Closures . . . tops in quality.

SHIPPING CARTONS

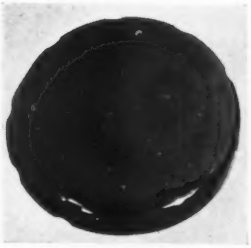
PLAIN and BRAND-PRINTED CARTONS . . . HANDY CARRIERS. We manufacture all styles and sizes of corrugated cartons. Filling your shipping requirements is another step in O-I service, providing one source of supply for every phase of your packaging problems and synchronizing incoming deliveries.

Its services cover designing sales-winning dress for products . . . upping the speed, lowering cost of filling . . . untangling snarls in processing . . . safeguarding quality and appearance in shipping. Call an Owens-Illinois representative from any one of our nation-wide list of sales branches.

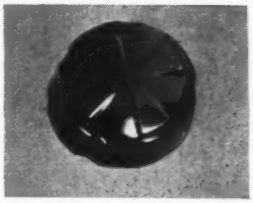
OWENS-ILLINOIS
GLASS COMPANY — **TOLEDO, OHIO**

First in Glass

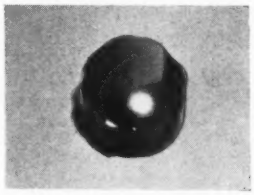
68. Dome top, with grooved side to facilitate opening of jar.



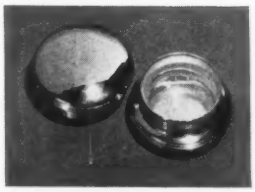
69. Dome top, with indented decorations.



70. Dome top, with variable indentations which define a square. Generally referred to as a "square top."

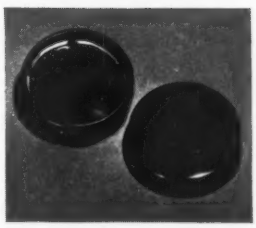


71. Double shell cap of burnished brass. This has an extension dome top. Upper and under views are shown.



72. Double shell cap of gold-wash brass. Upper and under views are shown. This has a dome top and long skirt.

73. Kep-Ark Autochrome cap. Inner shell is replaced with an expansion type ring which locks liner into cap and adjusts threads to the cap variations.



74. Left: Amerseal Nozzle and Beacon cap. A special nozzle or pouring neck combined with a single shell lug cap. Component parts are detachable. Right: Amerseal Nozzle and Amerseal.

75. Gripseal closure. A double shell re-seal screw cap, dome shaped, with special indentations for easy removal.

Re-Seal-Closure—Special Types

76. Deep screw cap.

77. Gasket lined deep screw closure.

78. Two-piece deep screw closure.

79. Ash tray top. Domed, single shell, continuous thread cap, fitted with a hinged disk that permits tipping. Three grooves provided for placement of cigarettes

80. Knife - opening closure. Deep screw single shell cap with special top that permits the insertion of a table knife for opening.

81. Tip-off. For sealing quart bottles containing distilled spirits.

82. Seal spout. An aluminum pouring spout. Made in a variety of sizes and shapes and applicable to both cartons and fibre cans.

Molded Caps and Closures

Caps of molded phenol formaldehyde (Bakelite, Durez, Resinox, etc.) and, to a lesser degree, of urea formaldehyde (Plaskon, Beetle) are used extensively and have distinct advantages. They maintain a permanent lustrous finish and are manufactured in a variety of standard designs and sizes for general use with screw-finish containers for nearly every type of product packaged in glass. They are available in a wide range of standard colors or they may be specially molded with any trade mark or design, or in any shape desired. As in the case of metal caps, the liner is a most important factor in the sealing security of the molded cap. Consequently, care must be taken to assure the correct liner if the product is to be securely sealed and the possibility of reactions between the liner and the product eliminated.

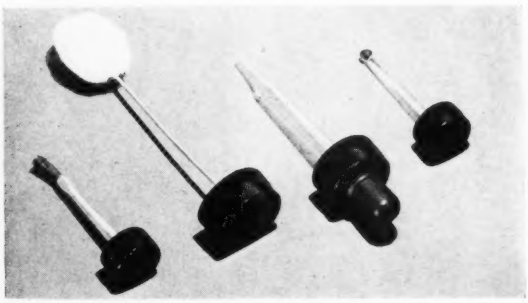
A new innovation is represented by closures molded of Polystyrene (Bakelite). This material has been chosen for acid containers because of its inertness.

In the wide-mouth sizes, molded caps are used to seal such products as chemicals, cosmetics, creams, etc.

In the narrow-mouth sizes, molded caps are ideal for use with such products as writing-inks, pharmaceuticals, wines, liquors, cordials, drugs, cosmetics, shampoos, polishes and a host of other products.

83. Flat top molded cap for jars. Continuous threads.

84. Various types of standard design molded bottle caps.



85. Molded caps with brush, dauber, dropper and applicator attachments.

86. Left: Molded cap with sponge applicator. **87.** Right: Molded sprinkler cap with screw top.

88. Anchor Trident cap, under view. Three interior lugs of special construction provide the means for effecting the closure. Used for bar bottles.

89. Molded design with single sprinkler opening.

90. Molded jigger caps. Shown are top view, with debossed trade mark; sealing type jigger cap and cover type.

91. Transparent acid resistant closure molded of Polystyrene material.

ENGINEERED STRENGTH. Mundet Closures are precision-made to assure maximum service and protection.

"Phantom" view of a Mundet Molded-Top Cork shows ribbed center pin anchoring the top securely in the cork—practically breakproof.

Mundet Molded Screw Caps in standard diameters in stock design or made to order, with cork liners to suit specific needs.

Mundet Embossed Wood Top Corks, made from pre-conditioned wood. Moisture resistant. Handsome 1 or 2 color embossing, or standard design.

Mundet Corks of all types, designed by specialists in cork sealing.

FIRST-AIDS FOR SEALING PROBLEMS are Mundet Cork Closures. For sealing that improves the package, assures full protection to glass-contained products, address your inquiry to Mundet. Mundet Closures include all the popular types, as well as many special closures designed to fill individual requirements of drug and cosmetic products, of wines, champagnes, liquors, etc. This is why we can advise impartially and most probably save you money. For samples, prices or suggested solutions to closure problems write to Mundet Cork Corporation, Closure Division, 65 S. Eleventh St., Brooklyn, N. Y.

MUNDET CLOSURES

MOLDED CORKS • MOLDED SCREW CAPS • EMBOSSED WOOD TOP CORKS • CROWNS • PLAIN CORKS

Mundet Offices Are Conveniently Located for Quick Service

Atlanta	339-41 Elizabeth St., N. E.	Detroit	335 W. Jefferson Ave.	Memphis	Memphis Bonded Warehouse
Chicago	2959 N. Paulina St.	Houston	Commerce and Palmer Sts.	New Orleans	432 N. Peters St.
Cincinnati	427 W. 4th St.	Jacksonville, Fla.	Laney & Delcher Warehouse	Philadelphia	2226 Arch St.
Cleveland	Britten Terminal, Inc.	Kansas City, Mo.	1428 St. Louis Ave.	San Francisco	440 Brannan St.
Dallas	505 Southland Annex	Los Angeles	1850 N. Main Street		also J. C. Millett Co.
Denver	The Stone-Hall Co.	Louisville	Kentucky Bottlers Supply Co.		

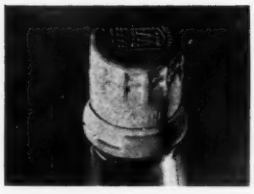
In Canada: Mundet Cork & Insulation, Ltd., 35 Booth Ave., Toronto

XUM

Tamper-Proof Types

92. Pull-strip cap. One-piece, tamper-proof cap made of aluminum. Closure is opened by pulling weakened strip off in either direction.

93. Laboratory cap. Open topped, tamper-proof aluminum shell to go over special vacuum sealed discs. For use when re-closure is not desired.



94. Break-away cap. Made of aluminum and threaded on the bottle. Breaks open as top is unscrewed while base is held in place on locating plug.

95. Safety cork. Tamper-proof aluminum seal over regular flange cork. Seal is broken by pulling weakened strip off in either direction.

96. Pelican cap. Large tamper-proof aluminum seal over regular cork. Disengaged top big enough to serve as drinking or measuring cup.

97. Canisters. Small aluminum tamper-proof cans. Screw or plain re-closure. Available in all color combinations. Photo courtesy of Guardian Safety Seal Co., Inc.

98. Tamper-proof molded cap (private design). Band breaks upon removal of cap.

99. Left: Alter-proof seal. An aluminum two-piece cap for liquor bottles. The upper part is a single shell screw cap; the lower an indented band which must be broken before the top can be removed. **100.** Right: Pilfer-proof cap. Made of aluminum. A single shell screw cap with perforated extended side. As the closure is opened the band or perforated strip is broken.

101. Alseco R-Overseal. A tamper-proof tear-strip type for metal cans, used as a secondary seal.

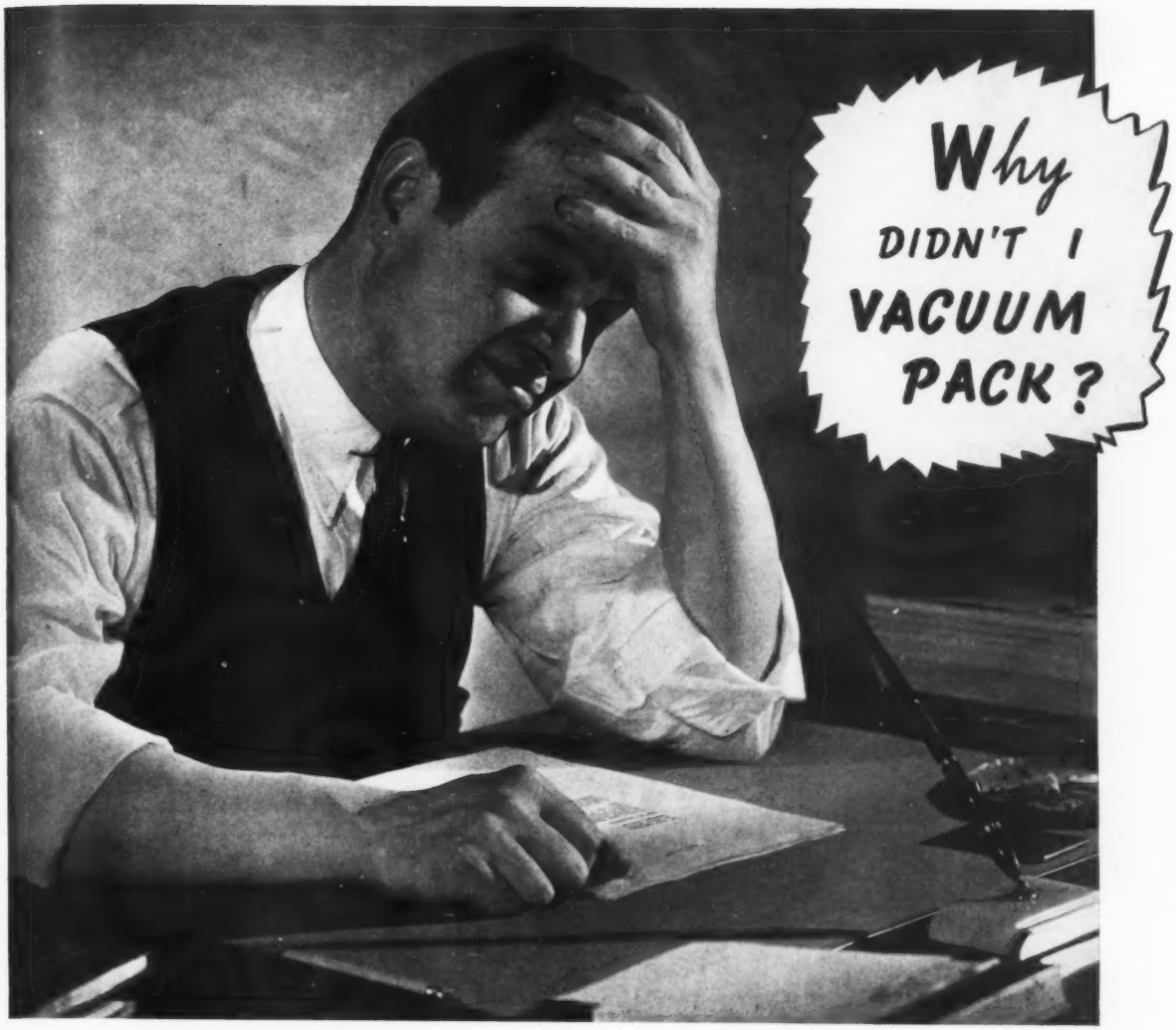
Secondary Seals

102. Left: Cellulose cap or band (Wind-O-Band). **103.** Right: Viscose cap or band (Sylphseal). Self-sealing unit. Made in a number of grades and finishes.

104. Cellulose cap or band (Cel-O-Seal). Fits over any type of closure and shrinks tightly to the bottle neck.

105. Left: Identical in purpose with No. 104, but larger; hence applicable to jars for all uses. **106.** Right: Filma-Seal, paper type. Also furnished in tamper-proof hermetic types and in lead and aluminum foil types of glass or metal containers.

107. Slip or friction cover-cap with long skirt. Decorative. Top and under view.



Foresight is better than regrets. And it's easy to get out AHEAD of competition if you give your product the extra sales appeal of vacuum packing. For vacuum packing preserves the appetizing taste and appearance of the product—delivers it "fresher" to your customer's table. Women have learned to look on vacuum packing as a sign of quality, especially now that dietitians point out the extra vitamin value of foods that are vacuum packed.

Why not shift to vacuum packing for your product and be happy about your sales? For Gold Seal "Flowed-In" Gaskets make vacuum packing easy and economical with any type of closure. Ask your cap manufacturer to show you Gold Seal "Flowed-in" Gaskets in your caps and to tell you how they make vacuum packing practical and profitable for your product.

CAP COMPOUND FOR
"FLOWED-IN" GASKETS

DEWEY AND ALMY CHEMICAL COMPANY
CAMBRIDGE CHICAGO OAKLAND MONTREAL

108. Left: Catsup cover-cap. Friction type with small lugs. **109.** Right: Catsup cover-cap. Screw type. Photo courtesy of the Crown Cork and Seal Co.

110. Dose-cup. Aluminum. Affixed to top of bottle, over regular closure and held in place by screw thread. May be an ordinary slip cover.

111. Slip or friction cover-cap for Mason jars. Placed over standard deep thread screw cap.

112. Hoods or capsules of metal foil. Each hood covers the entire top and stopper, as well as the upper portion of the neck of the bottle. Made of aluminum and composition of tin and lead. Hand or automatic sealing machines are used in applying these.

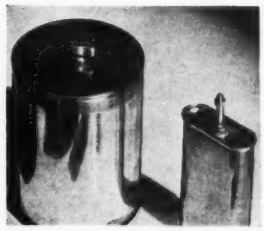
113. Filma-Seal of transparent type used in conjunction with a perforated screw cap to preserve full strength of a spice while permitting use of convenience features embodied in perforations.

114. Aluminum foil hoods for milk bottles.

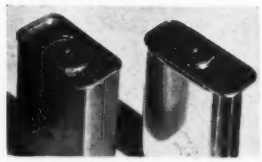
Closures for Metal Containers

In this group are shown caps and closures generally applied to metal containers. In addition, there are various types of pouring spouts which may be completely covered by the closure—such as that included with the Barroll cap (No. **123**)—or extend beyond it. All of the closures shown, with the exception of No. **125**, can be supplied direct by can manufacturers.

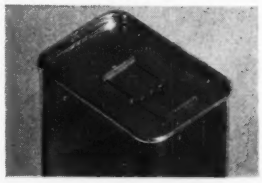
115. Top: Round lock top closure with inner paper seal. Used extensively for coffee cans. **116.** Bottom: Round sifter cap for cans containing talcum and other dry, free-flowing products.



117. Left: Wing-nut closure for sealing cans containing ether, etc. **118.** Right: Pouring spout, with screw tip, for small oil cans.



119. Left: Revolving sifter-dredge, for spice cans. **120.** Right: Slide cover, applicable to rectangular top cans, with or without rounded edges.



121. Sifter slide-dredge, for spice cans.

New Perfection

DROPPING PARTS

Meet the

Challenge of

Tomorrow

You, the successful manufacturer of pharmaceuticals, have met the challenge of the day for classic distinction in packaging and labeling. To meet the challenge of tomorrow, where dropping parts are needed, the distinctive and attractive must be combined with functional precision and adaptability.

If you avail yourself of the full resources of the "New Perfection" line, selecting from it the kind, style, color and size of dropping parts which best suit your individual requirements, you can calmly and confidently meet that challenge of tomorrow.

For "New Perfection" droppers are not only mechanically the most perfect ever made, but give you the greatest freedom of choice as to color schemes and special materials to resist oily fluids, chemical and climatic attack.

That's why so many of America's most successful pharmaceutical manufacturers have been using, for many years, "New Perfection" for all their products requiring dropping parts.

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PENNSYLVANIA GLASS PRODUCTS CO. 418-20 N. Craig Street Pittsburgh, Pa., U.S.A.

Not affiliated with any other glass concern

NEW!

The "New Perfection" dropper bottle now offers a distinctive new feature, a slightly concave back, to make the bottle lie flat, face up, for greater speed in labeling. Front is designed to provide largest possible label space, so important with such small bottles.

2 Double shell metal cap; special thin flange rubber part; special bent glass.

4 Single shell metal cap; clutch rubber part; tooled blunt glass.

3 Regular or acid resisting plastic cap; regular rubber part in various colors; semi-blunt glass.

Patented in U. S. A., Canada, Great Britain and other countries.

1 Non-rolling, extra depth, bakelite cap; non-swelling, Amekine synthetic rubber part, without strong odor; Saftee ball glass.

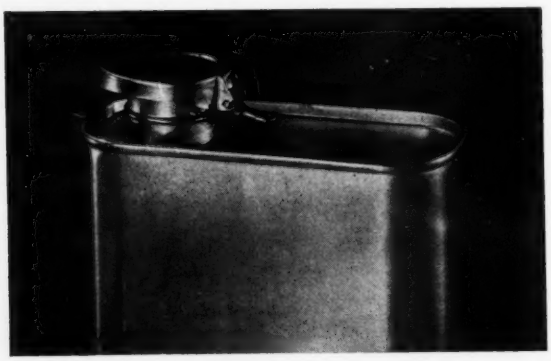
5 Fancy colored beetle cap; midget rubber part; regular straight glass.

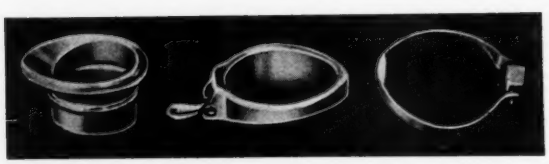
XUM

122. Left: Lug seal. Opens and closes with part turn. **123.** Right: Barroll spout and cap. Screw closure.

124. Left: U Press-It (inside pressure seal) with tear-off band. **125.** Right: Newman closure, spun on.

126. Left: Friction top, with or without inner seal. **127.** Right: Kork-N-Seal. Available also for use with wide- and narrow-mouth glass bottles.



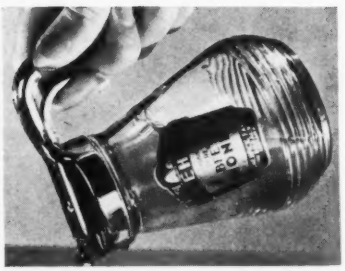


128. Pour-N-Seal cap and nozzle closure for oval pouring spouts.

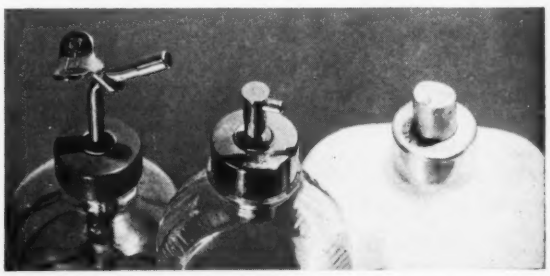
129. Lock-Tite slip cover.

Dispensing Closures

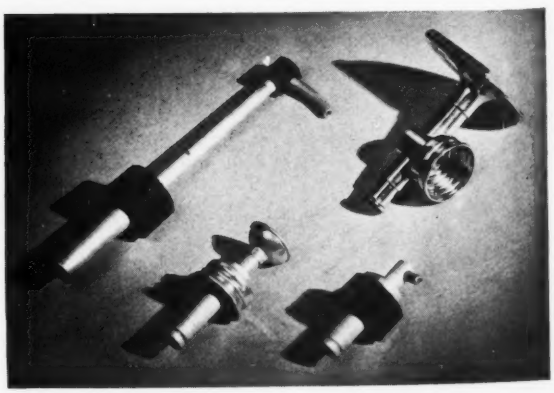
130. No-Kap. An adaptation of a type originally used for collapsible tubes. Closure operates by the sliding of two perfect hemispheres against each other under pressure.



131. Premium type dispensing closure for thick, viscous fluids. Trigger action draws back a spring device. Release of trigger effects instant cut-off of flow. Photo courtesy of Federal Tool Corp.



132, 133, 134. Dispensing type closures. Respectively, sprayer or atomizer, dispenser (continuous flow type) and dropper type dispenser. All are of the "push-down" spring type.



135. Four dispensing closures incorporating a drop-pumping device with either a metal or plastic continuous thread closure. Photo courtesy Scovill Manufacturing Co.

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MODERN Containers for
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and Sampling Demands
Wherever modern packaging is desired —for drugs, perfumes, cosmetics, extracts, oils, foods, samples and novelties—Kimble Vials are usually the FIRST CHOICE.
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Closure Linings and Sealing Compounds

The liners used for package closures are highly important in insuring the delivery of an acceptable package to the consumer. The liner is seldom examined unless inefficient, defective or improperly chosen. Considerable attention must be paid to this important subject so that the quality, quantity, potency or flavor of the packaged material, as originally prepared, is retained. The liner is equally as important as the outward appearance of the closure of which it forms a part, and of the actual container. A well-designed container and closure accompanied by an attractive label may be completely spoiled by a cheap or poorly selected liner.

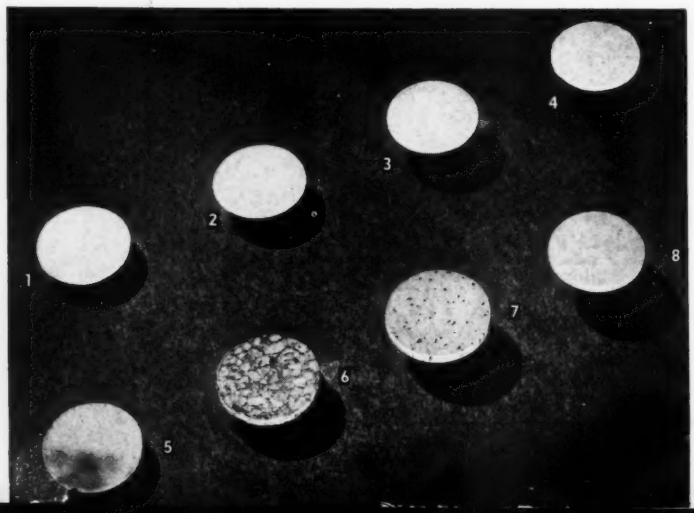
In considering liners, they may be divided into two classes, namely, simple and duplexed. By simple liners is meant a liner of a single material, treated or untreated. A duplexed liner consists of a backing faced with a material which is resistant to the product, the facing usually being adhered to the backing.

Simple Liners

Pulpboard	White felt
White waxed paper	Waxed saturated pulp
Saturated pulp	Plastic wax
Natural cork	Rubber (various types)
Cork composition (various types)	Special solvent (various types)

The duplexed liners, as previously stated, consist of facings and backings. Different combinations of facings with backings are possible.

Acknowledgment is hereby made to E. C. Emanuel, chief chemist, glass and closure division, Armstrong Cork Co. and to Robert J. Gray of the Dewey and Almy Chemical Corp. for generous aid in the preparation of this article.



1. Plain pulpboard liner. **2.** White waxed paper. **3.** Saturated pulp. **4.** Plain newspulp. **5.** White felt. **6.** Cork composition: B type crown discs. **7.** Natural cork discs. **8.** Plastic wax.

Duplexed Liners

Backings	*Facings*
Newsboard	Waxed paper
Pulpboard	Varnished paper (various types)
Cork composition (various types)	Vinylite
White felt	Panaseal
Tan felt	Metallic foils—tin, aluminum and lead
Gray felt	

It is most difficult, in a general presentation such as this, to specifically state what type of simple liner or duplexed liner should be used for various packaged products. Therefore, general comments will be made. The closure producers will gladly test samples of products and furnish the manufacturer with recommended types which will vary, depending upon the closure, the container and the shelf life, price range or physical properties of a given product. The choice of the liner should not depend on price, but be primarily based on the ability of that liner to satisfactorily seal the product. Naturally, the most economical liner will be used, but a doubtful liner, at lower price, may be a poor economy.

Plain Liners

Plain pulpboard and white felt can be used for retaining products which are dry and non-hygroscopic. Where powders, pills or capsules are being packaged, which are only mildly hygroscopic, white waxed paper, saturated pulp or waxed saturated pulp can be used, especially if a large diameter cap is being supplied. Cork composition will protect hygroscopic products and finds quite general use in the narrow-mouth package field, either plain or waxed. Natural cork, due to its high cost, has not found general use and has been supplanted by the cork compositions. Rubber liners may be supplied in various types, such as white, red, black or "transparent" pure gum. The rubber materials are quite generally used for alkaline products, such as cuticle remover, ammonia and the hypochlorites, for mold acids and for tincture of iodine. Pure gum rubber is generally supplied on solutions used for injection purposes.

Special solvent liners have been developed especially for caps with posts or wells where a washer type of liner is indicated, these liners being used with products containing organic solvents, such as nail polish, corn cures, solvent adhesives, etc.

Cross References: Tin Packages and Cans, page 232; Glass Bottles and Jars, page 256; Primary and Secondary Closures, page 263; Glass Finishes for Closures, page 295; Plastics for Packaging, page 318; Capping and Sealing Equipment, page 402.

PUT ZIP IN YOUR SALES WITH THE FAMOUS GUARDIAN ZIP STRIP!

GUARDIAN SAFETY SEALS are made to order in many sizes and for many products. Since they are all made to special order there is no stock catalog. However, GUARDIAN will be glad to send complete information about adapting this famous closure to your particular product, on request.

NOTICE!

An entirely new and revolutionary dispensing cap will be announced by Guardian in the near future. Watch for announcement in Modern Packaging magazine, early in 1941. Send for literature.

1 FINGER-TIP OPENING

The two way strip is simply zipped off with the fingers in either direction. This releases hermetic seal pressure and threads are already loose—ready to be unscrewed easily.

2 CONVENIENT RE-SEAL

Sturdy deep threads plus GUARDIAN'S special locked liner provide simple, efficient re-seal.

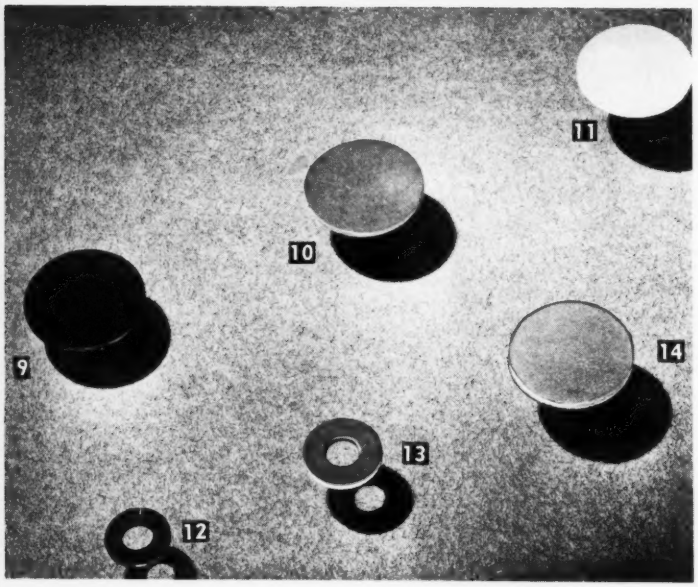
3 ABSOLUTE PROTECTION AGAINST COUNTERFEITING

Builds consumer confidence by insuring genuine contents. The zip-strip guarantees sealed quality.

GUARDIAN Safety Seal CO.

35 EAST WACKER DRIVE • CHICAGO

XUM



9. Special solvent. **10.** Red rubber. **11.** White rubber. **12.** Solvent with hole for applicator or dispenser. **13.** Red rubber with hole for applicator. **14.** Pure gum rubber.

Duplexed Liners

Duplexed liners, as already stated, consist of a backing and a facing and are the liners most generally used for closure purposes. Naturally, they are more expensive than plain or waxed pulpboard or newsboard, etc., but they do have much better sealing properties if the facing is correctly chosen. The backings consist of newsboard, pulpboard or cork compositions. The supply of newsboard is more plentiful than that of pulpboard and it is indicated for use except where a white backing is needed to maintain a light-colored appearance with a more or less transparent facing, such as waxed paper. In metal caps, double insertion is often used, in which the backing and facing are not combined, but the superimposed materials are punched directly into the cap. In molded caps, it is customary to adhere the facing to the backing with a tasteless, odorless material.

Several different grades of cork composition can be supplied, such as those with either large or small particle cord. Different degrees of resiliency may also be produced, using a dense or less dense composition and the binders of the composition may be either protein or resinous in nature.

White felt, tan felt and gray felt may be used as backings, although their use is limited. Gray felt has practically completely passed out of the picture except for technical products such as paints, varnishes and thinners, while white felt is sometimes used for pharmaceutical products, especially for pills and dry powders.

Quality waxed paper is the cheapest type of facing and can be used for powders and non-hygroscopic materials. This type of facing does not make a good liner for aqueous products, oils, preparations containing vinegar and the like.

The varnished papers can be supplied in several types, such as pale yellow oil, regular yellow oil, black alkali, etc. The varnished papers are used quite generally for pharmaceuticals and food products. However, especially for pharmaceuticals, tests are needed to determine what type can be supplied. The varnished papers are lower in price than the metallic foils, Panaseal or Vinylite and, for certain products, perform in a satisfactory manner.

Panaseal and Vinylite are tasteless, odorless types of facing mounted to white sulphite paper. They are generally better than the varnished papers, although they are attacked by certain organic solvents and essential oils. Vinylite is probably the most nearly universal liner developed up to this time.

Metallic foils, tin, aluminum and lead may be used with organic solvents. Lead, of course, is used only for technical products such as sulphuric acid, varnish, varnish thinners, lacquers and the like. Aluminum foil finds use as a spot for beer crowns and can be used for certain organic solvents. It cannot be used with wine or whiskey due to precipitation of tannins present in these products. Tinfoil is the most generally accepted liner for organic solvents, whiskey and essential oils. It is also used for many pharmaceutical products which are not acid in nature and which do not contain salts which might corrode tin. The duplexed liners are not indicated where a washer type gasket is supplied in a cap which contains a well or post, due to the fact that, with this type of liner, the liquid may pass between the post and the liner, saturate the backing and permit evaporation loss. Where the product is not difficult to hold and the bottle finish good, pulpboard or newsboard gives satisfactory results when used as a backing. Where the product is difficult to seal or the bottle finish slightly irregular, the added compression and recovery of cork composition produces the best type of backing with the safest sealing efficiency.

Special treatments may be applied to the duplexed liners, such as paraffin wax or high melting point wax. These treatments are used to improve the moisture-sealing characteristics of the liner. Casein coatings may be applied to either the varnished papers or metallic foils to help prevent the seepage of thin oils. Food products, which are not vacuum packed, can quite generally be sealed with varnished paper and newsboard as a backing. In certain cases, it is advisable to apply a wax coating to the varnished paper. For vacuum packed foods, a rubber gasket is quite definitely indicated either as a side seal gasket or as an inside gasket adhered to the cap top.

The foregoing refers specifically to screw caps and wide-mouth closures. Crown caps are used for carbonated beverages, citrate of magnesia and medicinal waters. Cork compositions are quite generally used as liners in crowns, either plain or wax treated, in the quick-selling class. For delicately flavored materials, such as carbonated water, club soda, table waters and the like, Vinylite, Panaseal or tinfoil spots are quite generally used. For ginger ale, a varnished paper spot is customary and for export beer, aluminum as a spot has been found to produce a superior type of closure.

In considering the proper choice of liners, past experience can be used as a guide. That is, if a liner has suc-

Design for "Lith'ing"

HAS "CAPPY" ever presented *you* with a booklet like this? He brings them to many a packer in the course of a year. They contain special *designs for lithographing* metal screw caps . . . color sketches which usually appear soon after on appealing new packages.

These designs are seldom a static restatement of a product name or trademark. They represent DESIGN in the fullest sense. Layout, color harmony, type styles . . . each element of design is expertly selected to do its share of the main job—*to move the package off the shelf,* and to suggest buying again and again. It is possible to employ all the measured arts of successful merchandising strictly within the limits of the cap dimension: 1. Call for attention; 2. Give a selling talk; 3. Create quality atmosphere; 4. Jog the memory.

Let us demonstrate how our specialized technique of cap design can be used to increase the merchandising effectiveness of *your* package. Let our creative ingenuity suggest how to obtain the most effective results through study of the package, the market, product protection, and other factors. Also, how to achieve such results without unnecessary cost.

And remember, lithographed metal caps are not costly for packers who buy in reasonably large quantities. In fact, successful designs can be produced in such cases *at no more cost than for plain white caps!* May we instruct "CAPPY" to present *you* with a Design for "Lith'ing"?

the ARIDOR Co.

3428-40 WEST 48TH PLACE — CHICAGO

REPRESENTATIVES IN: NEW YORK BUFFALO PHILADELPHIA CINCINNATI ST. LOUIS JACKSON MEMPHIS BIRMINGHAM MONTGOMERY ATLANTA NEW ORLEANS MONROE DALLAS HOUSTON DENVER SAN FRANCISCO LOS ANGELES

XUM

"ANCHOR

—THE BUSINESS MOTTO OF AMERICA'S SUCCESSFUL PACKERS

MODERN GLASS CONTAINERS: *Tumblers, thin-blown and pressed; plain or decorated... narrow-neck and wide-mouth Food and Drug bottles and jars... Liquor, Wine, Beer and Beverage bottles. Glass, most modern and sales-compelling of all packaging materials, attains a high state of perfection in Anchor Hocking's complete and attractive line of containers — a size and shape for practically every sort of product and purpose.*

We would appreciate the opportunity to discuss your packaging problems with you; to submit suggestions and to otherwise cooperate in making your packages most attractive and convenient to the public . . . most profitable to you. And, all without any obligation on your part.

ANCHOR HOCKING GLASS CORPORATION, Lancaster, Ohio

Closure Subsidiary:
ANCHOR CAP & CLOSURE CORPORATION
Lancaster, Ohio and Toronto, Canada

PACKAGING SERVICE, DESIGN AND RESEARCH: *A staff of experts in every phase of Packaging, Research, Engineering, Designing and Merchandising are at your service free of charge... a plus service that makes Anchor Hocking an ideal source of supply for both the large and small packer or manufacturer.*

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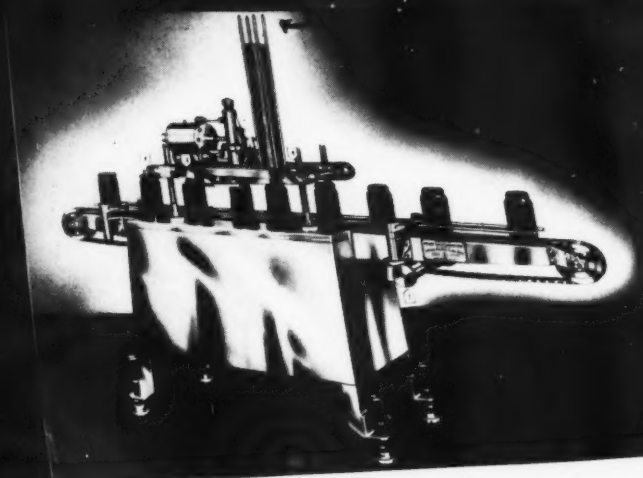
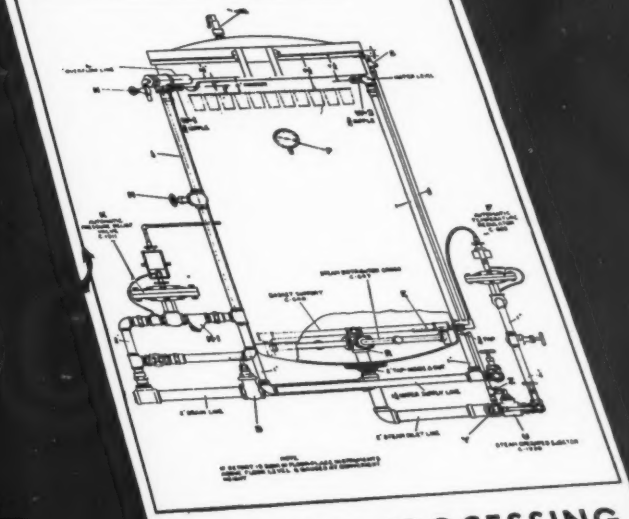
TO WINDWARD!"

METAL AND MOLDED CAPS: The most complete line of closures in the world—tin, aluminum and molded... airtight and vacuum, screw and lug types... a cap for every conceivable purpose, each providing an efficient, dependable seal.



SEALING MACHINES: A complete line of Hand, Foot, Semi-automatic and Completely Automatic types... furnished at a nominal annual rental for the application of Anchor Hocking Closures.

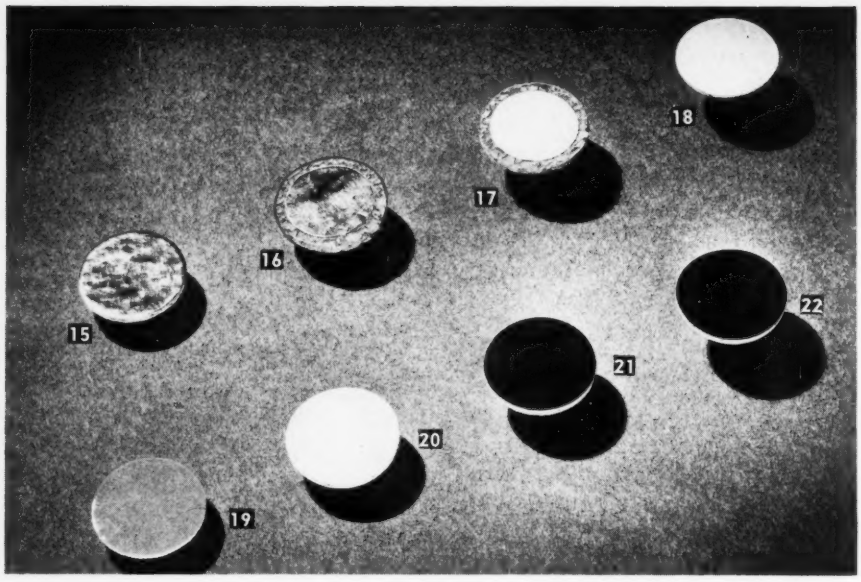


PRESSURE PROCESSING EQUIPMENT: Simple and sturdy in construction, positive in action, the Anchor Pressure Processing System completely controls the pressure in the retort during the coming-up, the processing and the cooling periods. Furnished at a nominal annual rental.

ANCHOR HOCKING GLASS CAPS

-an unbeatable combination

XUM



Duplexed liners: **15.** Cork and tinfoil. **16.** Crown disc with aluminum spot. **17.** Crown disc with Vinylite spot. **18.** Pulpboard and yellow oil paper. **19.** Pulpboard and Vinylite. **20.** Cork and Panaseal. **21.** Cork and Harvel. **22.** Cork and black alkali paper.

cessfully sealed a product for many years, it is wise to go carefully before changing to a cheaper type of material. In introducing a new product or in changing liners, the cap manufacturer should be consulted for liner recommendations. Many concerns will then wish to further check the cap manufacturer's suggestions in their own laboratory before the final adoption of a particular type of liner. The liner, generally, is the least expensive part of the package, but if failure occurs in the liner, the product does not reach the consumer in a satisfactory condition. Choose, therefore, a safe liner even though it might be slightly higher in cost.

Closure Sealing Compounds

Sealing compounds are used to provide a resilient gasket to make possible a tightly sealed glass or metal vacuum container. Most sealing compounds are made from specially compounded latices, i.e., water emulsions of rubber which are non-inflammable and non-toxic and which eliminate the fire, explosion and poison hazards of some of the compounds formerly in use. These compounds are "flowed-in," in liquid form, directly into a closure groove and dry to form an integral part of the cap or cover, with a smooth sealing surface. First adopted by tin can manufacturers for lining can ends, they have, in more recent years, found wide application for glass, paper and steel container closures as well.

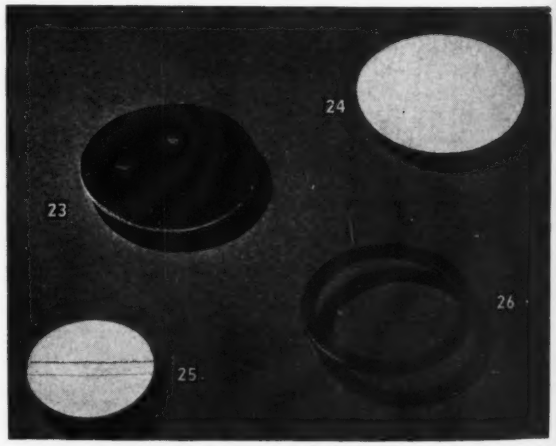
Different formulations are utilized for the various types of containers and closures. Thus a sealing compound, used for glass, must give a heavier gasket than that used on a tin can to take care of irregularities in the surface of the glass. Modern equipment has been developed which makes it possible to apply the compound to the caps efficiently and economically at volume production speeds.

A carefully controlled liquid virgin latex, compounded with suitable inert filler materials, is forced in accurately measured quantities into the cap as it is rotated under a nozzle. The closure is then passed through drying ovens which evaporate the liquids and leave a firm resilient gasket as an integral part of the cap.

For pails and steel drums, the same method of application is used. But here another gasket material is necessary, being specially compounded to supply the greater bulk required by the volume of the cover groove and also to give a softer, more resilient and more sponge-like gasket that will deform to make a tight safe seal when the cover is crimped onto the pail.

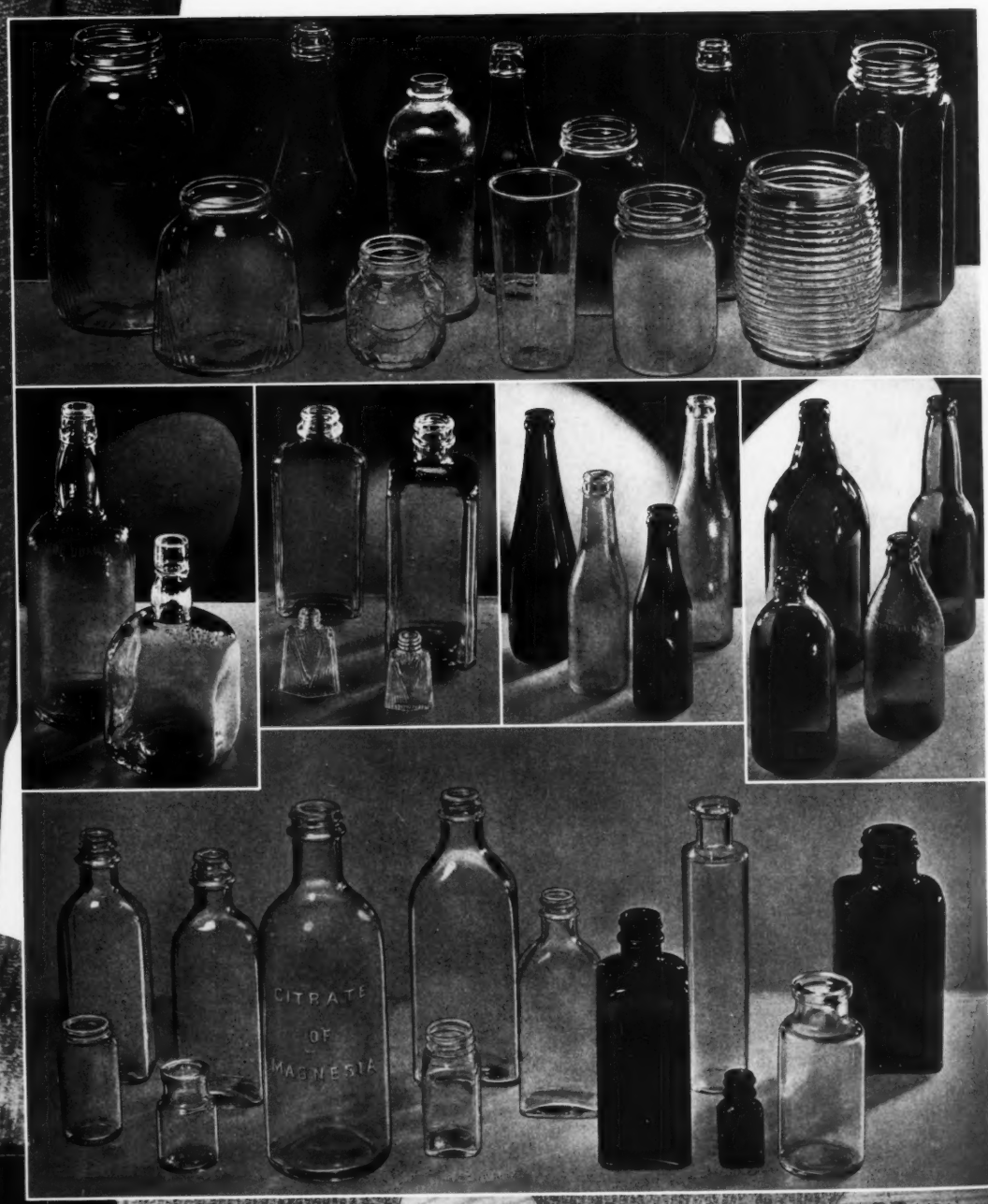
Flowed-in gasket liners are also used for the protection of products from the evaporation of essential and costly solvents. They are utilized, for instance, in a number of cases, by manufacturers of creams and cosmetic lotions where utility and consumer appeal would be destroyed if the product dried out during the relatively long period which may sometimes occur between shipment to the retailer and consumer sale.

23. Orolac coated foil bonded to white pulp. **24.** Plastic wax liner with built up surface. **25.** Patented vent cap liner with recessed diameter slot for relieving gas pressure developed within sealed glass containers. **26.** Slip rubber ring liner vulcanized into one-piece caps for hot packed products, mayonnaise, coffee and other hermetically sealed products.



Packaging your products for TODAY's markets
TODAY, the sale of packaged merchandise depends more than ever before on the ingenuity expressed in packaging units . . . and the way in which these units are combined to give your package sales-appeal. As Glass Packaging Headquarters, Armstrong is equipped to provide you with the complete glass package . . . quality glassware and closures combined to sell your product. Armstrong also offers to customers the services of its Package Merchandising Department.
The following pages illustrate representative examples of Armstrong's complete Glass Packaging Line.
Shaving Lotion
GOLDEN
KENTUCKY STRAIGHT BOURBON WHISKEY
ONE QUART
DRAKE
Shampoo
BLANK & CO., NEW YORK, N.Y.
DISTRIBUTED BY • UNITED STATES CO. • AMERICAN CITY
Extract
NET CONTENTS XX

ARMSTRONG'S *Glass*



CORKS OF ALL TYPES

XUM

Packaging Service is complete

PRODUCTS ARE PACKAGED FOR BETTER SALES WITH THESE MODERN GLASS PACKAGING UNITS

1. GLASS CONTAINERS of sparkling clearness, outstanding designs, and high quality are produced by Armstrong to give you packaging advantages that will mean increased sales and more profits. Armstrong customers also benefit by the century of Whitall Tatum glassmaking experience.

Included in the Armstrong Line are: Liquor Ware, Beer and Beverage Bottles, Medicinal and Toilet Ware, Wide-Mouth and Narrow-Mouth Food Containers, and General Purpose Ware. This ware is available in either stock or private mold styles.

2. CORKS OF ALL TYPES. Armstrong's Line of corks includes straight corks, flange corks, champagne corks (tirage and expedicion), tapered corks, shell corks, round-top corks, wedge-top corks, and orifice reducers. To add a further note of package distinction, Armstrong also provides a modern line of embossed-top corks; these may be embossed in handsome two-tone effects with your name, trade-mark, or private design—and Armstrong's Metal-Top Corks can be lithographed to suit your needs.

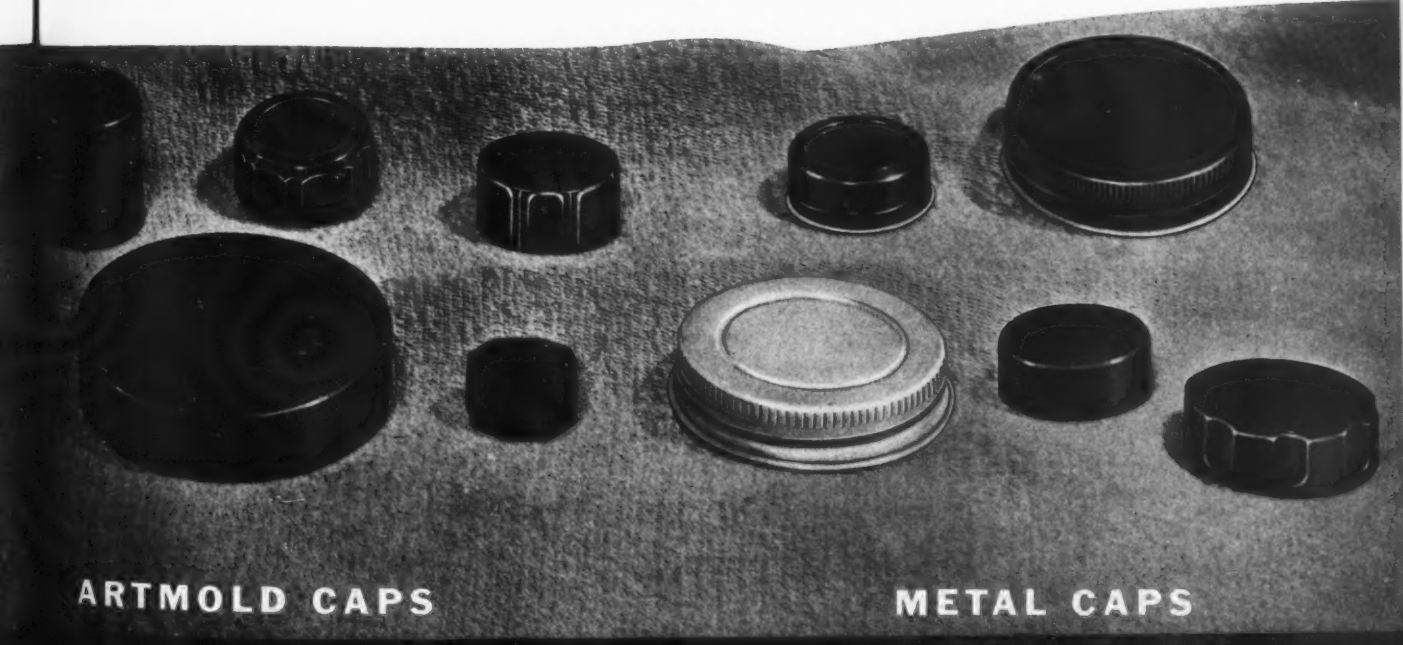
3. ARTMOLD CAPS and jar covers will finish off your packages with smartness and eye-catching beauty. Carefully molded from high quality molding compounds, their attractive colors and satin-like texture make them popular with users of a vast array of products.

4. METAL CAPS and jar covers carefully formed from fine-grained, ductile metal, are manufactured by Armstrong in single-shell and double-shell types for both narrow-mouth and wide-mouth glass containers. They are supplied in a wide range of standard colors or lithographed with your name, monogram, or trade-mark in any color combination desired by Armstrong's customers.

ARMSTRONG IS GLASS PACKAGING HEADQUARTERS

ARMSTRONG CORK COMPANY

Glass and Closure Division — **Lancaster, Pennsylvania**



ARTMOLD CAPS

METAL CAPS

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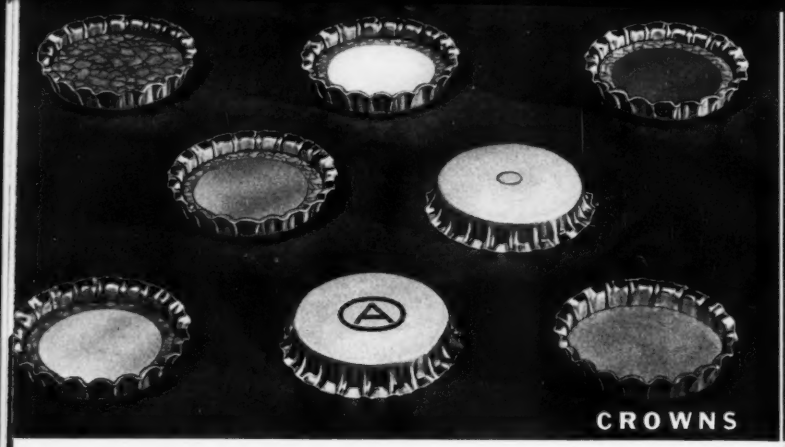
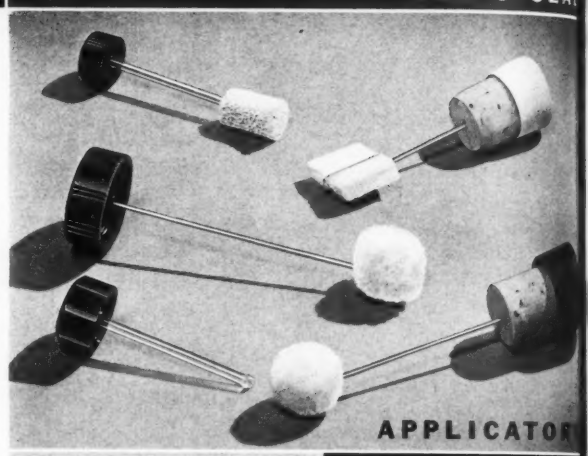


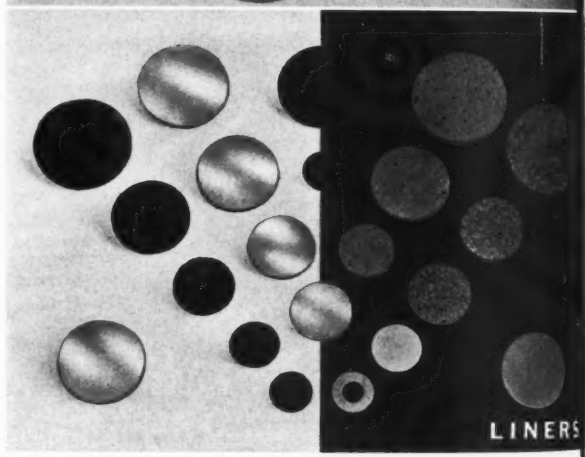
5. CROWNS for sealing carbonated beverage bottles, syrups, fruit juices, and food products may be had in standard colors . . . or specially lithographed with your special design or trade-mark. Armstrong's Crowns are made with discs or liners of resilient cork—either plain or faced with tin or aluminum foils or specially treated materials.

6. "CEL-O-SEAL" caps and bands (made by du Pont) are sold by Armstrong. They may be used on almost any kind of package. When impregnated with your trade-mark, by the du Pont patented process (U. S. Pat. No. 1,997,769) they prevent illegal duplication of your package. Wind-O-Band seals are secondary seals of the same type made for special use on liquor bottles. Their transparent "windows" permit inspection of federal tax stamps while the seal holds stamps securely in place.

7. APPLICATORS. Armstrong's Applicators are supplied with glass rods; quill brushes; twisted-wire brushes; metal handle brushes; cotton, felt, and wool applicators on wire; and sponge rubber applicators on glass rods. They are available in combination with closures of various types.

8. LINERS. Armstrong manufactures liners of all types, sizes, and thicknesses, including cork, felt, pulpboard, rubber, and special compositions. Armstrong also produces liners faced with various types of paper or foil to resist chemical action.





A Modern Laboratory to Solve Your Sealing Problems

Armstrong maintains its Central Technical Laboratory at Lancaster, Pennsylvania to help you. It is the responsibility of this laboratory to (1) determine the different combinations of glassware, closures, and liners particularly suited to specific classes of products . . . and (2) develop (through careful study) individual recommendations for the individual products of customers.

Armstrong's laboratory, package design, and engineering facilities are available to every customer who makes or distributes merchandise packed in glass. Give your package the sales-engineered features available through this service. For complete information, telephone the branch office nearest you—or write Armstrong Cork Co., Glass and Closure Division, 910 Arch St., Lancaster, Pa.

ARMSTRONG CORK COMPANY

GLASS AND CLOSURE DIVISION **LANCASTER, PENNSYLVANIA**

CC-194-1140

Printed in United States of America

XUM

Glass Finishes for Closures

Through the Glass Container Association of America, standards of finish for the closure receiving ends of glass containers have been established in recent years which make it possible for the glass container user to specify by number or style, with the certainty that any closure source and any glass source can produce products which will meet and match each other in a perfect fit on the production line. The most common standard closure finishes are here illustrated and described.

The sketches are drawings of actual glass finishes the way they appear on containers, without the caps or closures. Only in the case of any irregularity in the inside neck diameter is there a partial sectional view to illustrate the inside neck opening. Except in these cases, all other neck openings are normal inside neck diameters.

1. G.C.A. No. 120. A two-lug Amerseal A. S. (angle straight) finish used on neck sizes from 17 mm. to 40 mm., inclusive. A four-lug type, known as G.C.A. No. 140, is available for sizes from 43 mm. to 96 mm., inclusive. A six-lug type, G.C.A. No. 160, is available for the 108 mm. and 120 mm. finishes.

We are indebted to James R. Jackson of the Glass Container Association of America for aid in the preparation of this article and for the preparation of the illustrations utilized herein.

2. An optional variation of the G.C.A. No. 120 finish, known as the cam-off stop finish.

3. An optional variation of the G.C.A. No. 120 finish, known as the rib stop finish.

4. G.C.A. No. 200. A condiment finish consisting of a combination Goldy crown and screw cap.

5. G.C.A. No. 250. Also a condiment finish consisting of a Goldy crown and friction cap. G.C.A. Nos. 225, 235, 275 and 285 (not illustrated) are also available in the condiment finish series.

6. G.C.A. No. 300. All-glass spinkler top.

7. G.C.A. No. 310. All-glass sprinkler top. Drain back or concave style with sealing ring.

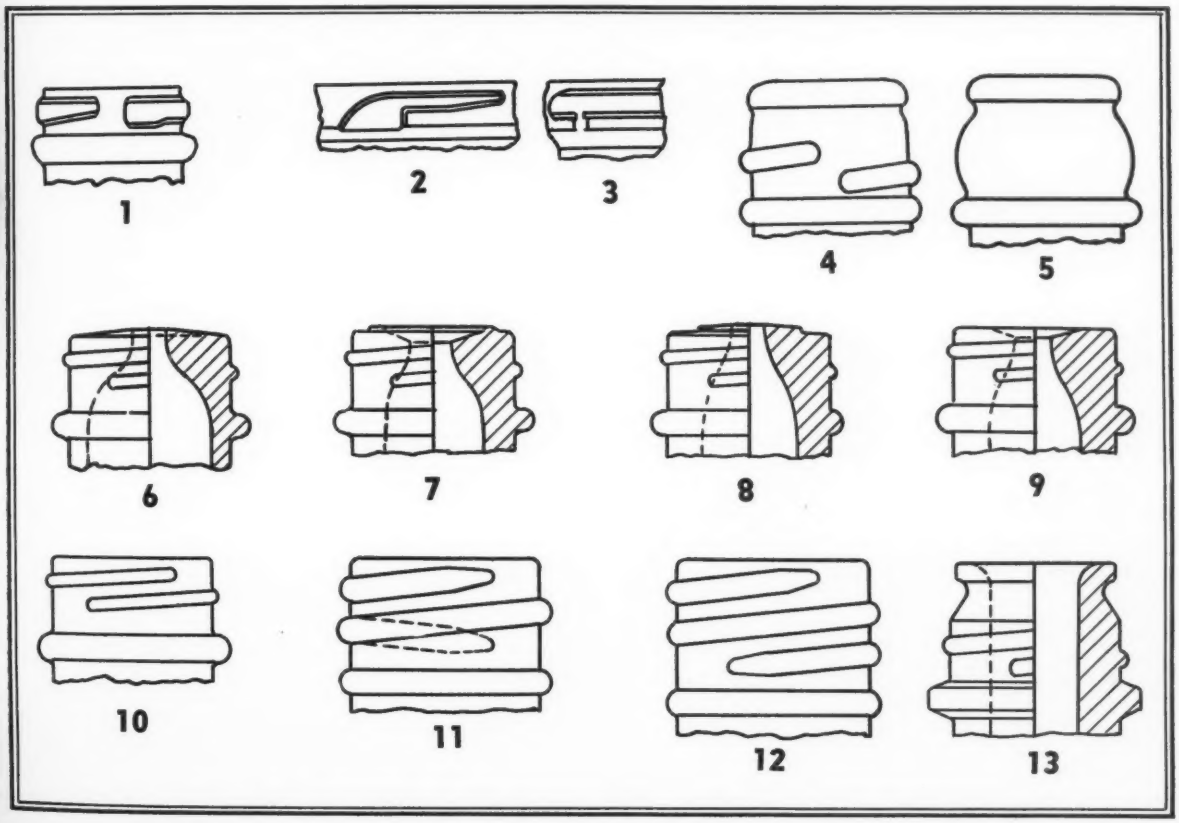
8. G.C.A. No. 320. All-glass sprinkler top. Nib opening.

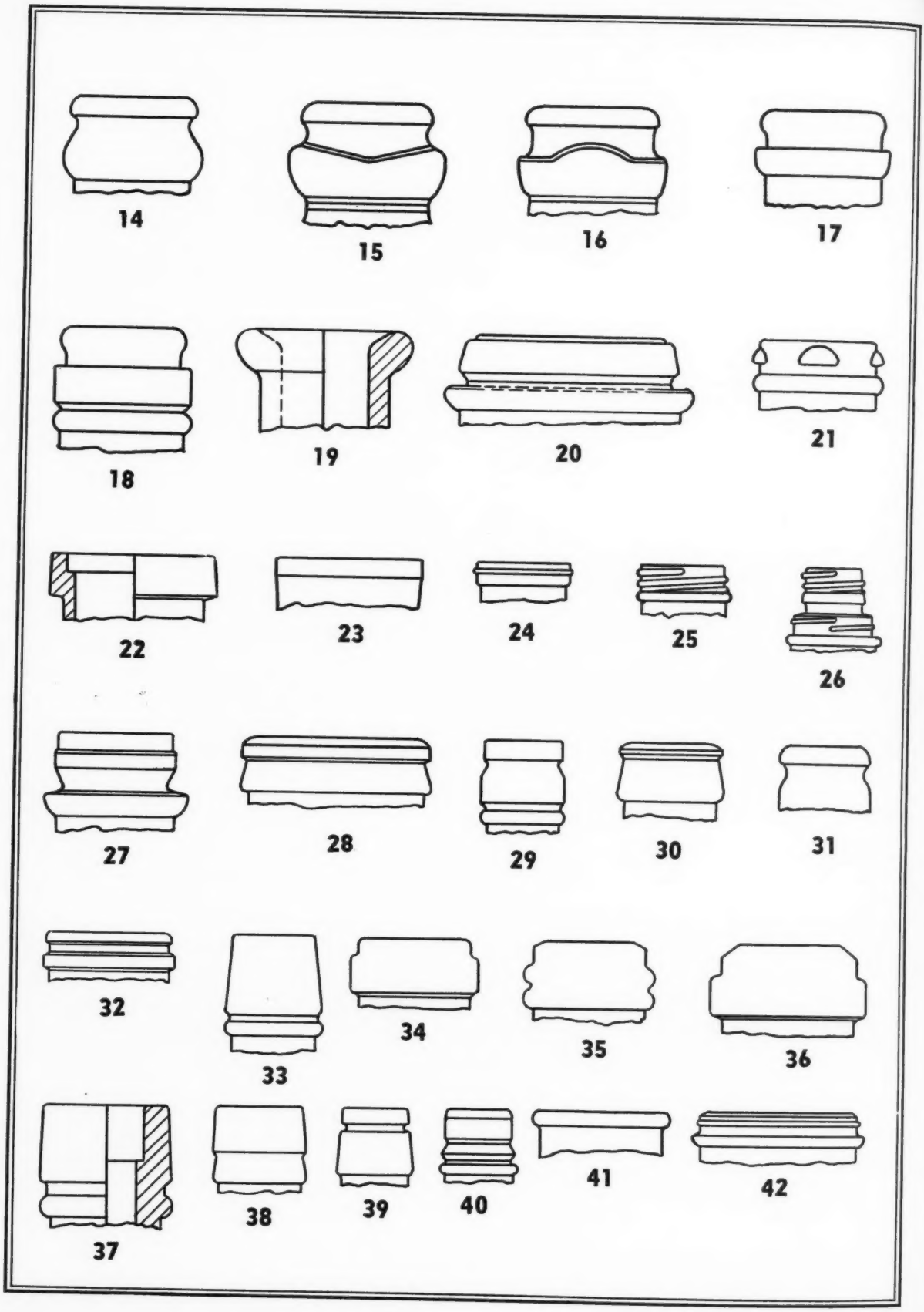
9. G.C.A. No. 330. All-glass sprinkler top. Drain back or concave style.

10. G.C.A. No. 400. Shallow continuous thread finish. Available in 17 recommended sizes from 18 mm. to 120 mm., inclusive. G.C.A. No. 425 (not shown) is a shallow continuous thread finish in the range from 8 mm. to 15 mm. (four sizes).

11. G.C.A. No. 410. Medium continuous thread concealed ball finish. Available in five sizes from 18 mm. to 28 mm. G.C.A. No. 411 finish is a medium continuous thread type in sizes from 30 mm. to 120 mm.

12. G.C.A. No. 415. Continuous thread concealed ball finish. Available in seven sizes from 13 mm. to 28 mm. G.C.A. No. 450 (not shown) is a deep continuous thread finish usually used on wide-mouthed

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ware. Recommended in sizes C, F, GX, G, J and K for neck openings of from 1½ in. to 4½ in. in diameter.

13. G.C.A. No. 430. A combination continuous thread and pour-out finish. Note pour-out feature. Available in eight sizes from 18 mm. to 38 mm.

14. G.C.A. No. 600. Crown beverage finish. 26 mm. size is most prevalently used on carbonated beverage and beer bottles. G.C.A. No. 700. Crown finish (not shown) available in ten sizes from 31 mm. to 73 mm., inclusive.

15. G.C.A. No. 1000. Variable ledge "pry-off" finish. Available in eight sizes from 36 mm. to 73 mm.

16. G.C.A. No. 1050. Variable ledge "pry-off" finish for 26 mm. size only.

17. G.C.A. No. 1100. Kork-N-Seal standard finish (illustrated). G.C.A. No. 1125. Kork-N-Seal tamper-proof finish (not shown).

18. G.C.A. No. 1110. English Kork-N-Seal finish.

19. G.C.A. No. 1150. Kork-N-Seal pouring lip finish.

20. G.C.A. No. 1200. Flip seal finish. Available in 12 sizes from 38 mm. to 90 mm., inclusive.

21. G.C.A. No. 1310. Uniplex seal finish. A recent development largely replacing G.C.A. No. 1300. Three and four lobe duplex seal finish (not shown).

22. G.C.A. No. 1400. Band cap finish. Also available in variant style No. 1425.

23. G.C.A. No. 1500. Pressed tumbler finish. Anchor or friction type. Also available as G.C.A. No. 1525 and G.C.A. No. 1575. Special forms for jars only.

24. G.C.A. No. 1550. Anchor bead finish for sizes from 27 mm. to 147 mm.

25. G.C.A. No. 1600. R. O. (roll-on) finish. A similar finish is G.C.A. No. 5000. Available in four sizes from 1 in. to 1¾ in. and known as the can-thread style.

26. G.C.A. No. 1620. Pilfer-proof, R. O. finish. Also available in variants G.C.A. No. 1630, tamper-proof and alter-proof, R. O. finish and G.C.A. No. 1640, Roverseal glass finish (not shown).

27. G.C.A. No. 1720. Deep friction "pry-off" finish. Also available in friction "pry-off" styles G.C.A. No. 1700 and No. 1710.

28. G.C.A. No. 1800. Goldy glass finish style HS. There are seven types in this series, two more of which are shown in figures 29 and 30.

29. G.C.A. No. 1810. Long Corseal finish.

30. G.C.A. No. 1875. Goldy finish.

31. G.C.A. No. 2100. Small size crown finish. Available in 20 mm. size only.

32. G.C.A. No. 2300. Upressit finish. Available in ten sizes from 26 mm. to 107 mm.

33. G.C.A. No. 3100. Brandy cork glass finish.

34. G.C.A. No. 3110. Sauterne or cognac glass finish.

35. G.C.A. No. 3150. Italian vermouth glass finish.

36. G.C.A. No. 3140. Champagne glass finish.

37. G.C.A. No. 3180. Glass stopper and shell cork finish.

38. G.C.A. No. 3190. Standard wine finish. Four other finishes complete this series: G.C.A. No. 3120, square ring cork glass finish. G.C.A. No. 3130, gin glass finish. G.C.A. No. 3160, sweet wine glass finish. G.C.A. No. 3170, medium brandy cork finish. These four are not here illustrated.

39. G.C.A. No. 3200. Constricted cork finish. Also available in variant style G.C.A. No. 3210, constricted cork finish—bead style. (See cork reference specification tables on standard G.C.A. drawings.)

40. G.C.A. No. 3370. Guardian safety seal type. One of seven different finishes in this the No. 3300 series.

41. G.C.A. No. 3750. Bead finish for jars without shoulders. Most generally used on machine made pressed and blown tumblers.

42. G.C.A. No. 3900. V. P. O. finish. A vacuum pry-off type available in eight sizes from 38 mm. to 70 mm.

Glass Vials, Tubes and Ampoules

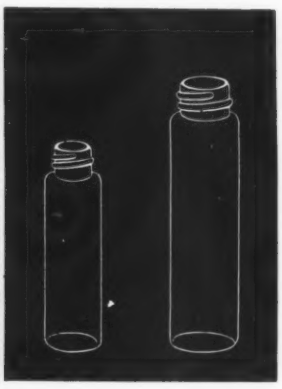
Glass vials are widely used for packaging liquids, powders and tablets where the requirement is for a small, convenient and light container, either for sampling or as a permanent sales package. Glass ampoules are accepted in the pharmaceutical industries as an ideal means—in many cases, the only means—of achieving complete sterility over long periods of time plus convenience in use. Glass droppers are the traditional means of portioning and dispensing medicines and other liquids which must be withdrawn from the container in a sanitary condition in a limited quantity.

All three classes of containers are made in basically the same manner from glass tubing drawn by automatic machines and subsequently fabricated by precision machines. The use of machinery provides an evenness of wall, eliminates distortion of vision through the walls without sacrifice of strength.

Standard forms of vials, tubes and ampoules are described in the following illustrations. The user is not, however, restricted to these forms. Vials can be fabricated in intermediate sizes and with flat or oval bodies and rounded as well as flat bottoms. Neck finishes can be varied to order and vials can be obtained open at both ends or other variations. Such special types are available with a minimum of tool and jig expenses, since the machinery which fabricates glass tubing and vials is extremely adaptable. This serves to permit of speedy delivery of special types. Standard types are usually available from manufacturers' stocks.

Acknowledgment is made to H. V. Wallace of the Kimble Glass Co. for aid in the preparation of this article.

1. Patent lip glass vials available in both short and long styles and in sizes from ¼ dram to 8 drams. Other sizes can be made to order.

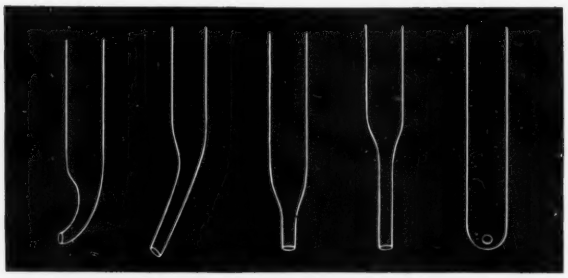


2. Screw cap glass vials available in both short and long styles in sizes from ½ dram to 8 drams. Other sizes can be made to order.

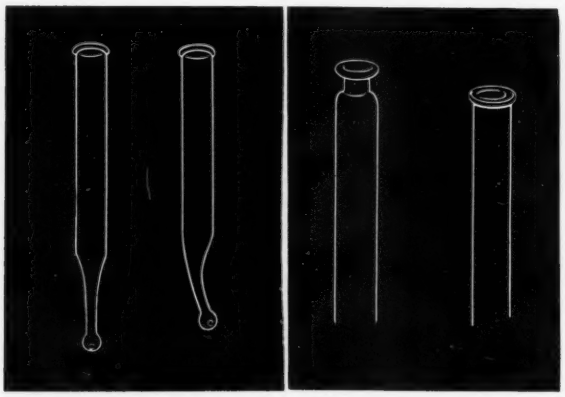
XUM

Since vials can be adapted to practically any type of closure, there is no restriction on the designer's ingenuity in "dressing up" the package. As for labeling, either metallic or paper labels can be used or, if desired, the glass itself can be decorated by printing suitable inscriptions and designs directly onto the surface. The printing ink can be an air-drying enamel, where permanency is not necessary, or it can be a colored ground glass in suspension which can be fused into the vial surface.

The smallness and light weight of vials make them particularly adaptable for use on display cards to which they are frequently stapled or attached by rubber bands. Vials are also used, on occasion, as inner containers in complicated assemblies. For instance, a well-known maker of glues and pastes uses a glass vial as a waterwell and brush holder in the center of each jar of library paste. Manufacturers of photographic chemicals frequently insert a vial of one chemical into the container holding another chemical so that the photographer may mix the two at the proper time.

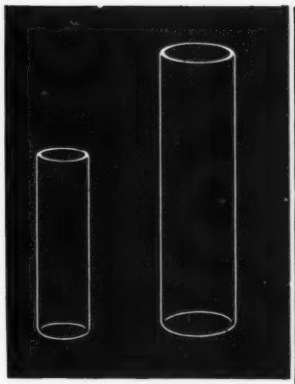


3. Typical finishes of the points of these dropper glasses are shown here. Other types can also be made to order. Outside diameters range from 4 to 11 mm. Body lengths from 19 to 175 mm.

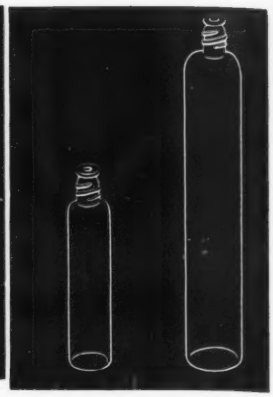


4. These typical point finishes supplement those in the preceding illustration. Other types can be made according to specifications.

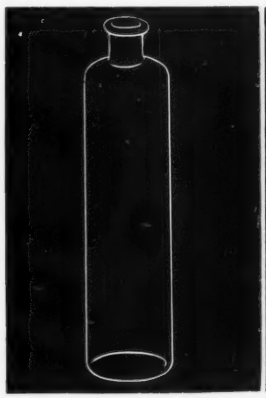
5. This shows the flanged and tooled types of nipple ends on the dropper glasses shown in the two preceding illustrations.



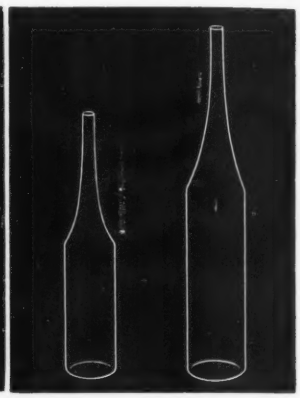
6. Shell glass vials available in both short and long styles in sizes from 1/4 dram to 8 drams. Other sizes can be manufactured to order.



7. Glass applicator vials made with long neck and small opening to permit dispensing of liquids in small amounts. Screw thread closure finish.



8. Glass serum vial available in standard flint and non-corrosive glass in capacities from 1 ml. to 25 ml. Other sizes can be made to order.



9. Standard ampoules with regular pulled neck available in sizes from 1 ml. to 50 ml. Other sizes can be made to order. Glass passes N. F. requirements.

10. Standard ampoules with constricted neck available in sizes from 1 ml. to 50 ml. Other sizes can be manufactued to order.

11. Serum bottles of the molded, U. S. Army Medical Corps type. These bottles are available in 15, 30, 60 and 100 ml. sizes.

LABELS, SEALS, TAGS

Section Nine

Pages 299 to 316

PRINTED AND LITHOGRAPHED LABELS

TRANSPARENT LABELS

EMBOSSED SEALS

MERCHANDISING AND INFORMATIVE TAGS

PACKAGE INSERTS

XUM

Printed and Lithographed Labels

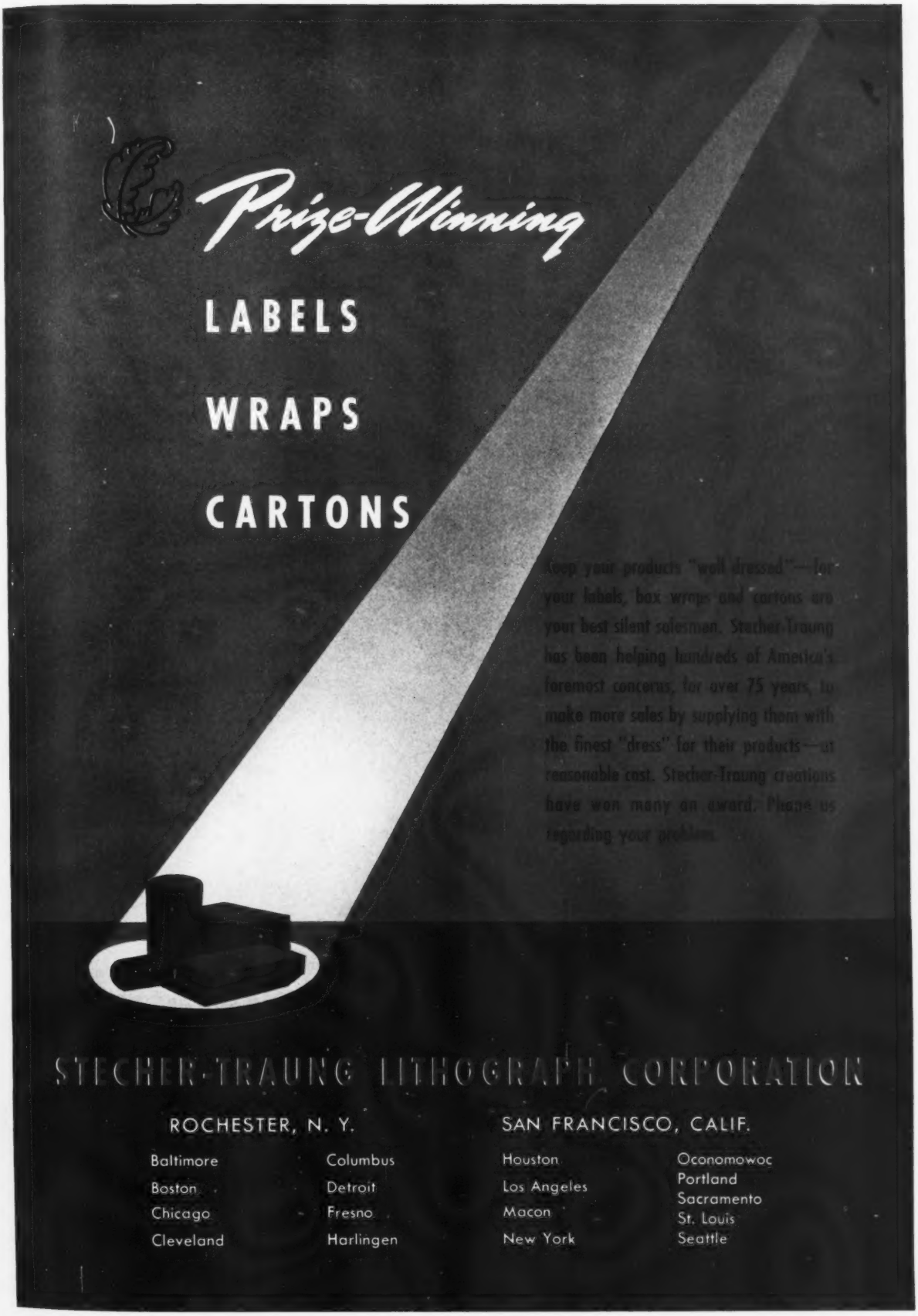
Labels are, of all package materials, among the most universally used. This is true because they are required whether the package consists of a can, a fibre can, a bottle or a box. They are required in many other instances as well and, in every case, they form the principal focus of attention for the consumer's eye. Thus label design and label reproduction are all-important elements in the achievement of a successful package, although the label itself may form the smallest item when package costs are totalled.

For this reason, the wise packager will pay particular attention to both the design and specification of his labels. If he utilizes an independent designer, he will make certain that the work of the designer is coordinated with that of the label producer so that he may know, in advance, that the design will be practical and will not present insuperable or unnecessarily expensive production problems. If—as is frequently the case—his label designs are worked out in cooperation with the label producer, he will still have much checking to do to make certain that the design is in conformity with trade traditions and government regulations. He will also check carefully to ascertain whether or not the label will work easily on his production equipment. Such questions as the stiffness of the paper, the location of varnish or lacquer or the direction of the paper grain are all too frequently ignored in planning labels and later arise to torment the production department and to create a substantial wastage at the point of production. It is ob-

Acknowledgment is made of the cooperation in the preparation of data for this article of M. C. Fenton, Jr., of The National Color Printing Co., Inc., and C. W. Browne, of The U. S. Printing & Lithograph Co.

Cross References: Color and Reproduction Methods, page 16; The Food, Drug and Cosmetic Act, page 20; Regulations Affecting Special Trades, page 25; State and Local Laws, page 28; Trade Mark and Copyright Protection, page 30; Set-up Paper Covered Boxes, page 74; Fibre-Bodied Containers, page 98; Decorative Materials—General Considerations, page 156; Protective Materials—General Considerations, page 177; Tin Packages and Cans, page 232; Glass Bottles and Jars, page 256; Transparent Labels, page 308; Embossed Seals, page 310; Merchandising and Informative Tags, page 311; Labeling Machines and Devices, page 420; Tight-Wrapping Equipment, page 434; Set-up Boxmaking Machinery, page 466; Fibre Can Making Machinery, page 470; Types and Functions of Adhesives, page 474.

1. Typical liquor labels. Note high proportion which are die-cut. A fairly large proportion use gold or other metallic inks and embossings. Colors vary from two to eight or ten, usually depending upon the price range of the product. Courtesy Fleming-Potter Co., Inc.


Prize-Winning
LABELS
WRAPS
CARTONS
Keep your products "well dressed"—for your labels, box wraps and cartons are your best silent salesman. Stecher-Traung has been helping hundreds of America's foremost concerns, for over 75 years, to make more sales by supplying them with the finest "dress" for their products—at reasonable cost. Stecher-Traung creations have won many an award. Phone us regarding your problems.
STECHER-TRAUNG LITHOGRAPH CORPORATION
ROCHESTER, N. Y.
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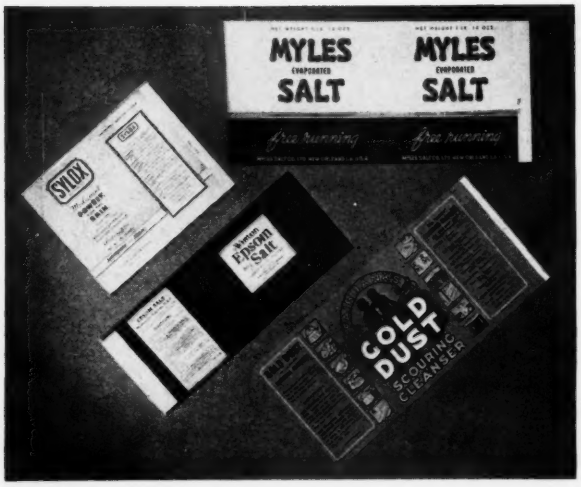
SAN FRANCISCO, CALIF.
Houston
Los Angeles
Macon
New York
Oconomowoc
Portland
Sacramento
St. Louis
Seattle

XUM



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2. Fibre can labels. Note allowance for overlap. If varnish or lacquer is used, this portion of the label must be left untreated. **3.** Packet and bar labels for tobacco, candy and soap products. Here, too, a portion of the label is left clear to permit the application of adhesive. **4.** Bottle labels. Note the wide variation in size and shape. Some labels, known as panel types, are used on only one face of the container. Others extend around round containers or over two or more faces of panelled containers. Courtesy The National Color Printing Co., Inc.

viously far better to spend 5 or 10 per cent more for the labels themselves than to have a wastage at the labeling machine of 5 to 10 per cent.

It frequently happens that label re-orders are awarded on the basis of competitive bids or that new suppliers are called upon to reproduce existing labels. In such cases, suppliers cannot be expected to produce their best work unless specifications are rigidly drawn and completely understood by all parties concerned.

Labels are usually produced by what is known as the "ganging" process. A large number of labels, requiring a given sequence of colors, may be printed simultaneously and later cut apart. Where the manufacturer purchasing the labels produces a wide range of merchandise, it is frequently possible to secure the economies of this ganging process.

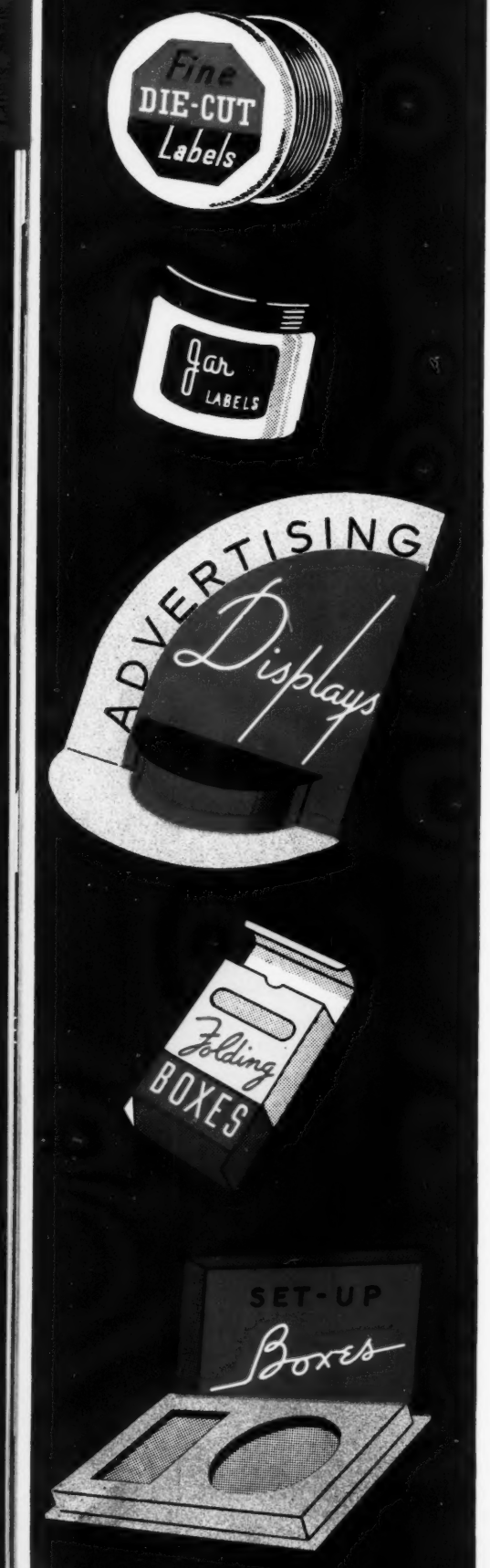
General Types of Labels

In discussing the general types of labels and wrappers, it is probably best to take up the general sub-division of containers one at a time, with a brief discussion of the types of labels appropriate to its division.

Glass: As the container is transparent, there is no necessity of showing an illustration of its contents. The sole purpose of this type of label is to identify the manufacturer, advertise the brand name, add an attractive touch of color to the package and enhance the value of the product in the consumer's eyes.

Package wrapper: The main function of this style of wrapper is to make an attractive and relatively inexpensive package which will keep the product free from contamination. In the event the manufacturer wishes to bring out the full value of the colors used on the

A B
Howell
TAKES THE MYSTERY OUT OF
Packaging
HOWELL of ELMIRA
LABELS
BOXES
ADVERTISING
DISPLAYS
F. M. HOWELL & CO.
ELMIRA N.Y.



GOOD PACKAGING

CAN BE AS SIMPLE AS

A B C

WHEN APPROACHED IN AN INTELLIGENT MANNER

●

Many years ago one of the Old Masters while working on a beautiful painting was asked how he mixed his colors. He promptly replied, "With common sense."

Package designing is no different. Only by approaching each and every packaging problem intelligently, can an outstanding package be developed.

The ability to do this, while not especially complicated or mysterious, is not developed overnight but through long association with packaging problems and betterment.

With a background of over 50 years of experience, HOWELL of ELMIRA offers you seasoned skill in package and label designing.

●

F. M. HOWELL & CO.

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wrapper and at the same time to keep the package clean, fresh and attractive during the period of its use, he may specify varnish or lacquer finish.

Paper box: In some cases, colored boxboard is used, making a box wrapper unnecessary. The only label required in this instance would be an end label designating commodity, size and the like, such as collar, underwear and shoe boxes.

Tin can: As the container is not transparent, it is important that the label give all pertinent information concerning the contents, in order that the consumer may have an accurate idea of what he or she is buying. This places a double burden on the label. It must make an attractive package and, at the same time, have sufficient reading matter to make it truly informative.

Canned food labels have made remarkable strides in the last few years and the art work and the printing or lithographing compares very favorably with advertisements seen in the best magazines of today.

Fibre can: The labels for this type of container are similar to the tin can labels, with the exception that fewer actual illustrations of the contents are used. This label serves the same purpose as the canned food label, insofar as the attractiveness which it lends to the package is concerned.

Case: These labels are usually placed at the end of wood or fibre cases, such as fruit crates, and are multicolored and very elaborate. The remarkable improvement in this class of label has materially added to the increased sale of these commodities.

Shipping: Under this classification will be found tags and stickers of all descriptions. The main function, of course, is to provide a means of writing the name and address of the recipient, with adequate identi-

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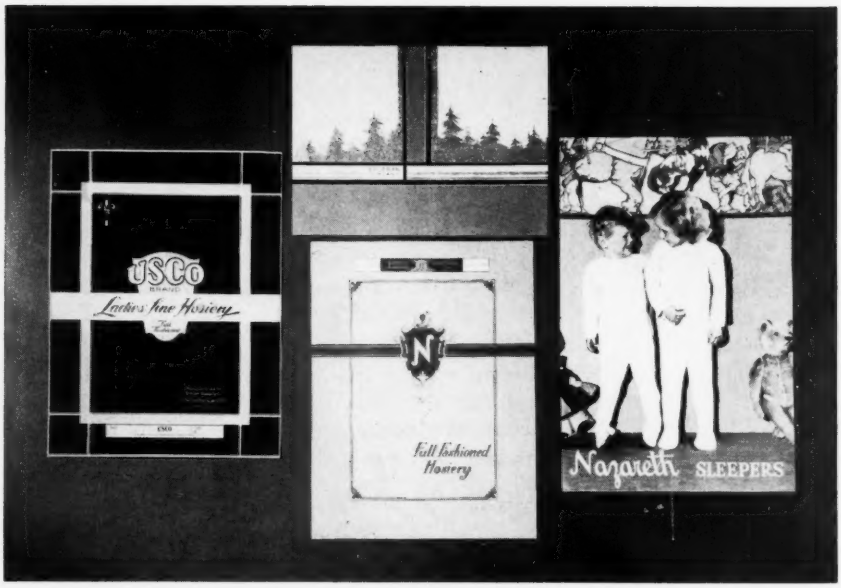
5. Can labels. Note provision for overlap. Note also frequent use of direct-color photography vignettes and presence of substantial blocks of informative copy. **6.** Carton wraps. Note that some are die-cut to facilitate folding over carton faces. Photo courtesy The U. S. Printing & Lithograph Co.

XUM



7

7. Set-up box wraps. These are used either to cover the entire top and side walls of set-up boxes or as labels covering the top only. Courtesy The U. S. Printing & Lithograph Co.

fication of the sender. It also does not prevent them from serving, in some degree, as advertisements, through the inclusion of trade marks, advertising slogans or specific illustrations.

The stickers usually carry special handling instructions, inspection notices or data regarding service requirements en route.

Methods of Manufacture

There are two methods of manufacture most commonly used today in making labels: one, printed or letterpress and the other, lithographed or offset. The relative merits are debatable, one group leaning toward the printed label, the other toward the lithographed label. Approximately the same effects can be obtained by either method and both require the necessary original art work and engravings. (Special types—such as applied color labels, decalcomania, embossed foil, transparent labels, etc.—are treated in separate articles in this section.)

Printed: The printed label requires electrotypes cast from the original engravings and, on the press, the ink is applied to the electrotypes from the ink rollers and then transferred to the paper by direct contact. This method permits a greater flow of ink and is especially advantageous on solid backgrounds.

Lithographed: The lithographed label requires zinc or aluminum press plates made from the original engravings and, on the press, the ink is applied to the press plate from the ink rollers and then to a rubber blanket and finally transferred from the rubber blanket to the paper by direct contact. This method is especially adaptable to labels carrying halftone or exceptionally fine screen illustrations.

Any label can be reproduced by either method and the final choice is dependent on factors varying in every case. The average person cannot differentiate between two copies of the same label, if one has been lithographed and the other printed.

Label Materials

Machine finish or book paper: An uncoated sheet used generally on inexpensive labels where a finish such as gloss overprint or spirit varnish is not required. This type of paper works best on labeling machines, because of its softness and flexibility.

Super paper: A highly calendered book paper used on labels, with and without a finish such as gloss overprint or varnish and is relatively inexpensive as compared with coated paper.

Coated paper: Used on the more expensive labels, with or without gold or aluminum bronze, varnish, lacquer or embossing. Even without varnish, the inks are more brilliant, as the coating prevents the absorption of the ink into the paper, thus enabling the ink to dry on the surface and present a glossier appearance.

Metallic and foil paper: Used more frequently on cosmetics, condiments and carbonated water. They are relatively expensive as compared with other papers, but in return present a very brilliant, eye appealing and attractive appearance.

Transparent paper: Such as glassine and cellulose, is used where transparency or semi-transparency is desired and has often an added advantage of being moisture-proof.

Inks: They are innumerable in color and are made with various qualities to suit a particular need. For instance, inks can be made to be sun-resisting, alkali-proof, scratch-proof, alcohol-proof, odorless. The uses for inks having any one or two or more of the above qualifications are obvious.

Finishes: In the last decade there has been an increasing demand for labels with a high gloss finish.

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ALL AMERICAN WINNERS FOR 2 SUCCESSIVE YEARS

ALL AMERICAN LABEL PRODUCERS

All American Winners

Yes, we are proud of the fact that our products are acclaimed the finest in the All-American Competition. Years of experience in producing the finest work by skilled craftsmen enable us to give your lithographing and embossing needs that All-American touch.

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There are a number of materials on the market which can be applied on the surface of the printed or lithographed label to give this effect. There is one quality which is the common denominator for all finishes—a shiny finish which brings out the brilliancy of the inks and which also prevents soiling of the label.

Gloss overprint or spot varnish: This is applied by press, the same as a color; the entire surface can be varnished or any portion or portions, no matter how irregular, can be left unvarnished. It gives a fairly high finish and is relatively flexible. It is not moisture-proof, but slightly moisture-resistant. It acts as a bond for the inks on the label and prevents scratching.

Spirit varnish: This is applied by a regular varnishing machine which requires the sheets to pass through a heated box. It has a considerably higher finish than gloss overprint.

Lacquer: Lacquer produces a high gloss finish and can be used on almost any type of label. There are different kinds of lacquer manufactured for special uses, such as moisture-proof, heat-sealing, scratch-proof.

There is a relatively new finish on the market which is a rubber derivative, containing approximately the same characteristics as lacquer and especially adaptable to packages requiring moisture-proofing, scuff-proofing and scratch-proofing.

Stock Labels

There are two broad classifications of stock labels. One may be termed "convenience" labels, which—strictly speaking—are only adjuncts to packaging proper. These include shipping labels, address labels and stickers to indicate the character of the contents or to insure safe handling in shipment, such as "Fragile," "This Side Up," "Glass," "Poison," etc. Similar enough in character to be placed in the same classification are the special seasonal stickers by means of which the all-year package may be given a gift or holiday personality, such as special Christmas seals or Mother's Day or Easter stickers.

"Packaging," proper, concerns itself more particularly with the second classification, which may be termed "product labels." Fairly enough, the question may be asked: "Is the use of stock labels in line with *modern* packaging?" Judged by years in use, the answer might be "No." Judged by utility and extent of use, the answer would probably be "Yes."

Stock labels go back many years prior to the era of packaged merchandise. Rummaging among some old records recently, the writer came across a color printed circular dated Feb. 1, 1881, bearing the signature of Russell, Morgan & Co. (now The U. S. Printing & Lithograph Co.), advertising "Stock Soap Box Labels" and quoting prices per 100 and per 1000, with rates for imprinting soap name and firm name. Apparently the intervening 50 or 60 years haven't brought much change either in the way stock labels are sold or in the way they are used, though, of course, the "private design" or individual package was not then used to anywhere near the extent it is today. Fifty years ago, the labeled package of branded merchandise was the exception; today it is the rule. In reality, the stock label blazed the trail for modern packaging.

Today, though the stock label may not be strictly in line with modern packaging, it nevertheless fills a real need. There are three important reasons for its use: 1. The quantity may be too small to warrant a private design. 2. There may be an imperative need for a rush delivery. 3. It may be desirable to pack the goods under a different label from the regular stock.

8. Case labels. These are usually applied to the ends of wooden or corrugated fruit shipping cases. Courtesy The U. S. Printing & Lithograph Co. **9.** Bundle labels used to seal the ends of bundled packages where bundling is used to form 1/2 doz. or 1 doz. shipping units. Courtesy The National Color Printing Co., Inc.

8

9

DIRECT Advertising VIA CARTONS
THE packages illustrated here are widely known—a tribute to the direct advertising power of the carton. It has been our privilege to render a service to these manufacturers which cannot be measured by price alone.
We can help you, too, in developing and producing folding cartons and display containers which will do a direct advertising job for your product.
The United States Printing & Lithograph Company
AND DIVISIONS
Plants at CINCINNATI • BROOKLYN • BALTIMORE • ERIE, PA. • ST. CHARLES, ILL.
HOME OFFICE 341 BEECH STREET, CINCINNATI, OHIO
25¢ A PACKAGE OF 5 CIGARS
It's Ripe Tobacco
PHILLIES
America's greatest cigar value
HONEY GROVE Blend
Cooling Refreshing
ICED TEA
THE CINCINNATI WHOLESALE GROCERY CO.
NET WT. ½ LB.
PREP
LONDON LAVENDER
Refreshing
Quickly Relieved, Cushioned
25¢
STANDARD WHITE
Dr. Scholl's Zino-pads
Put One On—The Pain Is Soon Gone!
Put one on—the pain is gone!
CORNS
RUSTLESS • SMOKELESS
PETERS
DE LUXE TARGET
SHOTGUN • SHELLS
CRAYONEX
SUPER QUALITY CRAYONS
THE FLASHLIGHT OF TOMORROW
MODERN
COLORFUL
DISTINCTIVE
BRIGHT STAR POTTERY CO.
Agfa
CHAM
SPARK

DIRECT *Advertising* VIA LABELS

YOUR package—because it goes *direct* to your consumers—represents an unparalleled opportunity for *direct* advertising.

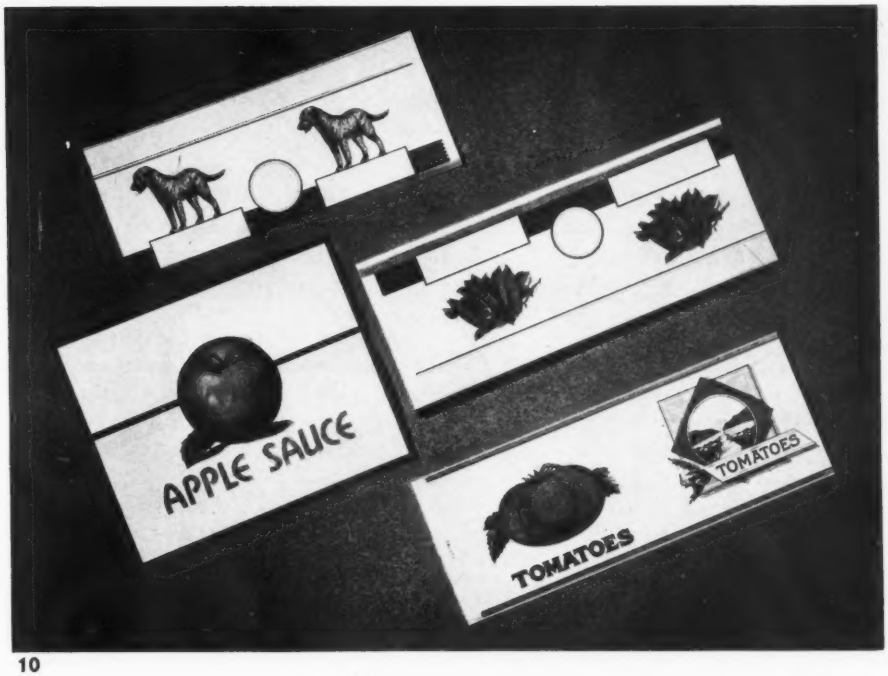
Many progressive producers and distributors have adopted a new and modern way to take advantage of that opportunity by using our EYE-PETIZED Recipes. You will see a few illustrations* on this page.

We'll gladly send samples on request.

The illustrations show how EYE-PETIZED recipes are used on canned foods. The "over-all" background shows how splendidly appetite appeal can be conveyed by colorful illustrations.

The UNITED STATES PRINTING & LITHOGRAPH COMPANY AND DIVISIONS

Plants at CINCINNATI • BROOKLYN • BALTIMORE • ERIE, PA. • ST. CHARLES, ILL.
HOME OFFICE 341 BEECH STREET, CINCINNATI, OHIO



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10. Stock labels for cans and fruit crates. These are imprinted with product, brand, producer name and other data where runs do not justify the use of individualized labels. Courtesy The National Color Printing Co., Inc. **11.** Stock labels for cans and bottles. Photo courtesy The U. S. Printing & Lithograph Co.

Label producers recognize this need and many of them are prepared to supply the demand. Some of them go in heavily for stock labels, but it must be admitted that others are rather luke-warm. This is not, however, a churlish attitude of disservice. Rather, the label printer or lithographer who takes that attitude is, in reality, helping to convince his customers of the importance of character and individuality in packaging, thus genuinely furthering their interests.

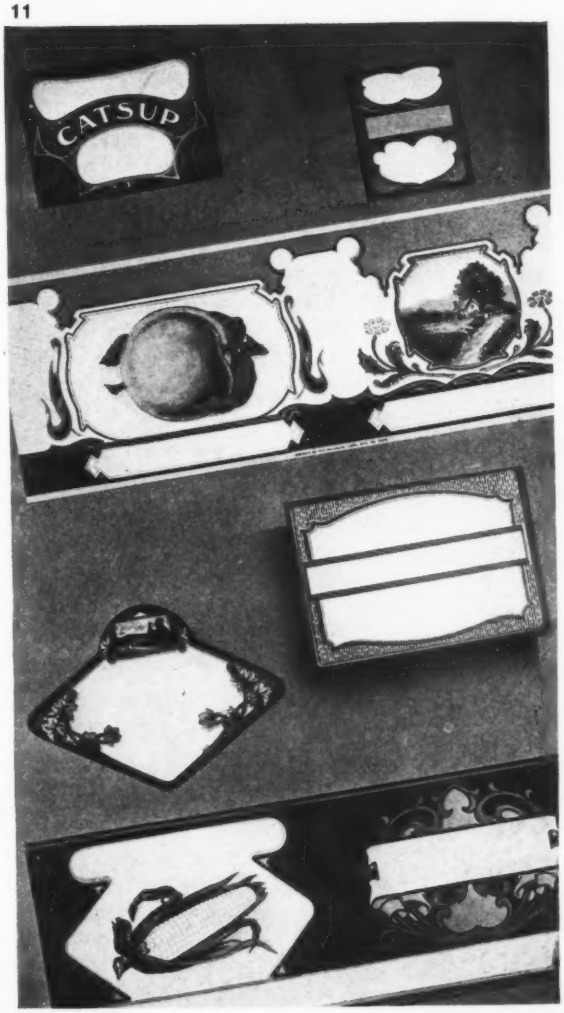
This does not mean that good designs are unobtainable. There are plenty of them and they are available for products of many kinds. But, as a general rule, the private design outranks the stock design in attractiveness and sales power.

Stock labels are a god-send to the small producer, because they are sold in lots as small as 1000. Frequently the entire transaction is conducted by mail. Samples or catalogs and price lists are sent on request, the customer makes his choice, prepares his copy for imprinting and sends in his order. Deliveries can be made promptly.

Prices depend, of course, on size of labels, number of colors used, die-cuts, embossing, etc. Compared with private designs produced in large quantities, the prices are relatively higher, but it must be remembered that stock labels are sold in small lots as a rule. If the purchaser had to pay all costs of art work and plates on the small quantity he uses, the prices would be prohibitive and he would doubtless be denied the use of a colorful label. By means of the stock label, he may obtain a good looking package for a small investment.

Obviously, the user of the stock label cannot be assured of individuality in design, though houses specializing in stock labels have been known to parcel out their various designs on what almost amounts to a territorial franchise basis.

11



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Transparent Labels

With increasing frequency, manufacturers have come to desire a means of attaching to glass containers trade marks, brand names and other label data which will not obscure a full view of the container's contents.

The mounting vogue for rigid transparent containers made of cellulose acetate and nitrate materials and for transparent plastic containers has likewise demanded labels of this non-opaque type.

Several means have been developed for achieving such label effects. The article on decalcomania labels in the Displays Section describes one of these processes, whereby transfer decalcomanias, made with a transparent background, are applied to glass containers, wood, plastic or metal packages and, in fact, may be applied to any type of rigid container in a manner which permits either the product or the package surface to serve as a background for the lettering.

In the glass container field, several methods of applying printing directly to the glass have recently been developed which achieve substantially the same effect. These are treated in the article "Glass Bottles and Jars."

A third method of achieving a similar effect is utilized in the case of rigid transparent cellulose acetate or nitrate containers and displays. Here the sheet material is printed or roll leaf stamped while in the flat and is then fabricated into a three-dimensional container. If such printing is designed so as to utilize no background, the desired transparent label effect is achieved as an integral part of the container.

A fourth method involves printing of the label data on cellophane sheet materials backed with a suitable adhesive so that close adhesion to the walls of the glass or plastic containers may be attained. Here again, since the print-carrying material is thin and transparent, the effect achieved is one in which the type and decorative matter seem to be applied directly to the surface of the container. When such printing is applied in reverse to the rear surface of the cellulose material, a label is achieved which is impervious to stains, water, grease, etc. Such labels may be successfully applied to glass, plastics, metal, wood, rigid transparent cellulose and non-absorbent papers.

Cross References: Rigid Transparent Containers, page 104; Rigid Transparent Displays, page 150; Glass Vials, Tubes and Ampoules, page 297; Glass Bottles and Jars, page 256; Hand Made Glass Bottles, page 261; Plastics for Packaging, page 318; Displays: Design, Distribution and Installation, page 346.

Left. Applied color decoration printed onto glass and baked thereon for permanency. **Right.** Transparent label as used on a clear glass container. Note how clearly the printing is apparent to the eye. Photo courtesy Palm, Fechteler & Co.

LIBRARY OF
a Million
LABELS
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For a positive solution to YOUR label problems turn to the EVER READY Library of a Million Label Ideas, a gigantic source of Label Information!
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ASK FOR SPECIAL SAMPLE ASSORTMENT AND YOUR COPY OF THE EVER READY CATALOG OF 528 USEFUL LABEL IDEAS! NO OBLIGATION!
ILLUSTRATION COURTESY OF CONSOLIDATED WATER POWER & PAPER CO.

Embossed Seals

For luxury products and to give the *effect* of luxury to prosaic products, embossed labels and seals are increasingly being used. Embossing, "to decorate richly," describes its own effects. It adds a third dimension to reproduction, which means added sales stimulus through two senses: visual and tactile. High gloss papers are used to reflect light and give a smooth touch.

Foil papers of 99.6 per cent aluminum plus .4 per cent binding alloy, in thicknesses ranging from .00035 to .004 (the thinner ones being of necessity mounted to paper —sometimes gummed), are often used. Pyroxylin papers are also used. Both types come in colors and are sold by the ream or by the roll.

Printing in up to 3 colors, embossing, scoring and die-cutting are done in one automatic operation. Largest practicable sizes for automatic production are: 1 color, 11 in. by 14 in.; 2 colors, 7 in. by 11 in.; 3 colors, 5 in. by 7 in. For larger labels, the *separate* methods of printing, then embossing, then die-cutting are used. There is no limit except paper width (24 in. to 26 in.) and press size for this multiple-process embossing. Cost differences between the two methods are determined by the nature of each specific problem.

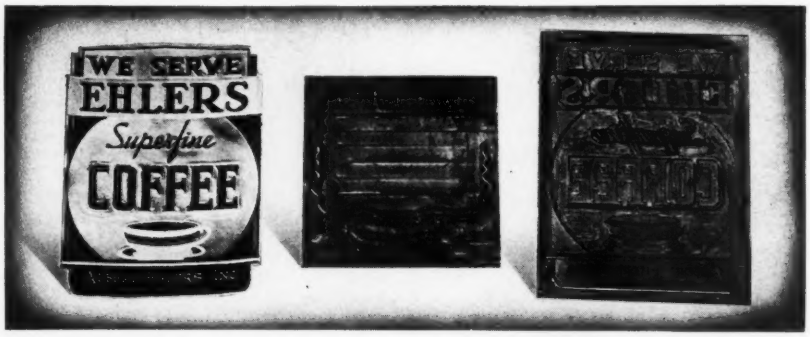
Swedge (height of embossment) is never greater than 1/8 in. and requires a body grasp (surrounding area) of 3 times depth to get sufficient pull. Swedge is determined by the thickness of the foil and not by the backing.

The expensive part of embossing is die making. Dies are made of brass (for short runs up to 50,000) and steel (for long runs—specially hardened for extra long runs) by photo-engraving with ferric bichloride. Hand finishing of the etched plate is, however, the essence of die making. Some dies must be made completely by hand. On occasion, a small hand made die will cost more than a large one with less hand work. It is best to consult your embosser, therefore, before preparing art work. His advice can help to direct art work to anticipate savings in die making.

Labels are frequently die-cut and scored for the purposes of design emphasis and ease of application. They may be applied either automatically or manually; the proportion being relatively higher by the latter process in comparison with the application of various other types of labels.

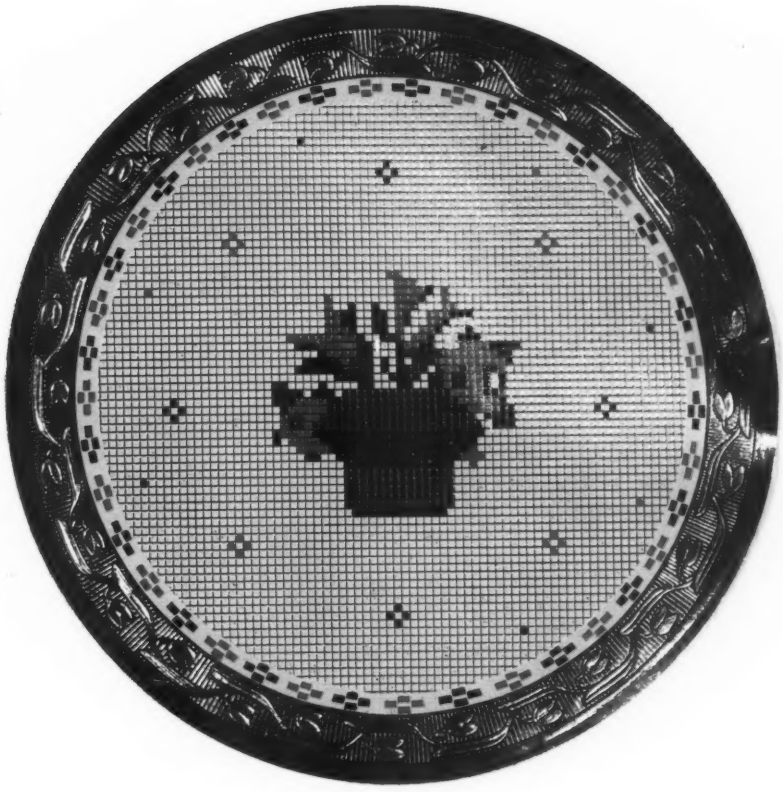
The technique of manufacture applied to the embossed label has, in recent years, been extended to the box wrap field, where embossed portions of a wrap are labeled onto the wrap itself and then the whole applied to the box. This is particularly economical where the embossing is small relative to the whole wrap.

Another development in recent years involves the building up of embossed labels, utilizing several materials—various colors of foil or pyroxylin paper. Various segments of such labels are mounted on a carrying stock and reach the consumer as a completely fabricated whole, ready for application to the package.



Left: A large, automatically produced embossed label. The two colors are printed on one press. Center die prints first color, right die prints second color, embosses and die-cuts pattern in a single operation.

Group of automatically produced embossed labels and seals showing a variety of possible effects and shapes. High gloss papers are utilized to reject light and give a rich appearance. Photos courtesy Cameo Die & Label Co.



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52 EAST 19th STREET · NEW YORK

MOSAIC DESIGN

THE Package Oft Proclaims the Product . . . As we approach a period when hand work must replace the machine, we turn, for inspiration and suggestion, to the outstanding creations of other years. Mosaics, magnificent in marbles, enamels and rare materials, provide countless unusual and interesting motifs.

We offer, for your selection, a number of color prints suitable for use on Box Tops, Wrappers and Labels. Faithfully reproduced by our artist-engravers, they reflect good taste and quality, give your packaged-product distinctiveness, individuality, eye-appeal, sales-appeal.

The design shown on the reverse side demonstrates at a glance the quality and craftsmanship which have distinguished Krause workmanship for many years. This design can be reproportioned to the size and shape of almost any product. Let us show you how we would handle your package—at a cost surprisingly low. An inquiry entails no obligation.

RICHARD M. KRAUSE, INC.

Designers • *Engravers* • *Printers*

52 EAST 19th STREET, NEW YORK, N. Y.

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Merchandising and Informative Tags

Tags, like labels, provide a simple and efficient form of marking and identification. They are particularly desirable in cases where the use of adhesives and firmly fastened labels would be inadvisable. Thus, they have found their widest use in the textile and garment fields and for sporting goods, electrical equipment, furniture, luggage, building supplies and similar merchandise.

In the last few years, tags have increased in importance with the growing trend towards supplying the consumer with detailed information regarding the product, its qualities, its composition and its use. While this trend has been termed "informative labeling," it frequently leads manufacturers to the use of tags of one form or another particularly where label copy space would necessarily be limited. In such cases, a properly designed tag permits of an almost indefinite extension of copy space at extremely low cost.

Many manufacturers attach tags to their products to carry information required by law. Thus, for instance, textile and fur merchants and manufacturers use tags to achieve compliance with Federal Trade Commission and other rulings regarding the declaration of the actual nature of the components of their products. More frequently, however, the impulse towards tagging does not arise from a legal compulsion, but rather as part of a sound merchandising policy. Thus, manufacturers of such varied items as furniture, cooking ware, electrical household accessories and household textiles have long realized that a detailed informative tag, suggesting proper care for the product in use and explaining the best ways of achieving satisfaction from the use of the prod-

Cross References: The Food, Drug and Cosmetic Act, page 20; Boxboards: Types and Selection, page 32; Decorative Foils, page 162; Decorative Ribbons and Ties, page 174; Printed and Lithographed Labels, page 300; Embossed Seals, page 310; Package Inserts, page 314.

1. Tags formed of printed foil, folded for two-sided effect, with string either drawn through hole or cemented between foil folds. Courtesy Cameo Die & Label Co.

uct, was a long step in the establishment of the primary sale and the prevention of merchandise returns. Informative tags have a further function in educating the retail sales person. Frequently, tag information is so worded as to appeal particularly to the salesclerk and to provide the latter with selling arguments.

For products consisting of a number of units, tags serve as identifications after the outer package has been destroyed. Frequently, tags are used on otherwise unpackaged products as the only available means of carrying necessary identifying and informative data to the consumer. Tags with special finishes are also widely used. For instance, lacquered marking tags are practically standard in the meat packaging industry, because they are scuff-proof, alkali-proof and grease-proof and meet the most exacting marking tag requirements in many other industries, too.

Stocks: A wide variety of tag stocks is available, such as coated tagboard in many thicknesses and colors, tagboards laminated with metal foil in gold and silver and other such grades to meet the customer's needs. Recently, special tagboards have been developed of the "safety paper type" with an all over water mark design worked into the sheet to prevent counterfeiting.

Printing: Tags may be printed in one, two, three, four or five colors on one or two sides, from type, line-cuts and Benday or halftone plates. While in fact virtually any reproduction process may be utilized for tag production, the resultant tag must be able to withstand harder wear than is commonly experienced by an adhesive applied label.

Attaching to Article: String in different grades and colors is, of course, the most common method of attaching, but many other methods are available, such as button slots (of various kinds), barbs, wires and metal clips. Frequently, where none of these devices is suitable, it is possible to develop a new method of attaching. There are few articles that do not lend themselves readily to the use of one sort of tag or another.

2

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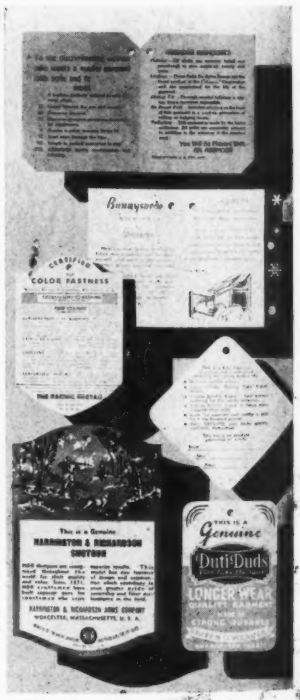
2. A portion of the large series of tags used by Sears, Roebuck & Co. to provide consumers with detailed information on the products they purchase. **3.** Die-cut tags assume varied shapes. Frequently copy function is to inform salesclerk as well as consumer. **4.** A group of tags designed to insure satisfactory use of the product by providing consumer with instructions. Photos courtesy Dennison Manufacturing Co.

4


ENGRADEL

TRADE MARK

U. S. PATENT NO. 1803836

The Engradel Transparent label has established a leadership in the labeling of fine packages which grows more impressive with the years.

In helping to create fine prize winners in seven years, this distinguished label has made history in the packaging industry.

From the very conception of your design to the finished product, the Engradel label goes thru the hands of the craftsmen who take pride in making a real contribution to the packaging art.

Never completely satisfied, our manufacturing operations are constantly improved, following the motto:

"GOOD, BETTER, BEST,
NEVER LET IT REST,
TILL THE GOOD IS BETTER,
AND THE BETTER . . . BEST!"

No large stock of containers is necessary. Apply Engradel labels under your own supervision, as and when you need them.

PALM, FECHTELER & CO.

220 West 42nd Street, New York, N. Y. — 21 East Van Buren Street, Chicago, Ill.

BOSTON CLEVELAND BUFFALO

Package Inserts

The package has long been recognized as a primary advertising medium. No other medium, in fact, is quite so selective in its circulation. The package reaches every consumer of the product and only the consumers of the product. There are no omissions and there is no waste of costly circulation.

For this reason, manufacturers have frequently utilized package advertising in the form of inserts or attached booklets, folders, printed wrappers or other informative matter. Grouping the lot under the term "inserts," we find a number of functions which can be performed, either separately or simultaneously, by these inexpensive devices. The package insert can tell the consumer how to utilize the product to best advantage and thus create a resale market. The insert can suggest added uses unknown to the consumer and thus hasten the time of repurchase and increase the volume of goods moved but with a minimum sales expense. Outstanding examples of the performance of both of these functions are found in the recipe books distributed by millions of such firms as General Mills, National Dairy, Borden's, etc.

Frequently, indeed, manufacturers find these booklets so important a part of their advertising program that they advertise the booklet in their consumer publication advertising insertions. The booklets are not mere advertisements, but actually become a part of the product and consumer choice as between products is frequently influenced by the fact that a new booklet or insert is being offered with one of the products.

Another form of insert most widely utilized is the premium coupon. In the tobacco field, this takes the form of a label under the transparent wrap. In the food industries, it is often the practice to insert the premium coupon either directly with the merchandise or inside a folding carton, but outside of the inner liner bag. When printed coupons are to be utilized in direct contact with the product, it is advisable that an accurate laboratory check be made to ascertain that neither the paper nor the ink will in any way contaminate the product or subject the product to regulatory seizure.

Types of Package Literature Units

Co-product inserts: In this form of insert, the printed literature is inserted in with the actual product by hand or automatically by special insertion machinery. It usually is placed on top of the merchandise as a last operation before closing the package.

Due to reactions of inks, certain non-poisonous vegetable compounds should be used if the product requires it. Government regulations are strict and specific in this regard. Usually single-leaf inserts are used, due to the fact that with finer products such as flour, etc., a folded insert will bring out considerable of the product when the insert is removed. Specially oil treated papers are used with oily products such as canned sardines, shoe polish, silver polish, etc.

Inner-carton inserts: Placed along the side of the bottle or jar. They can be inserted by hand or special inserting machinery. They are removed after the bottle or jar has been taken out. Due to the fact that they usually cannot be seen unless the carton is examined after the bottle or jar has been removed, such inserts are often made inexpensively to allow for a high percentage of waste.

Over-end inserts: This form is inserted over the end of the cartoned jar, tube or bottle to make more certain of its not being overlooked when the carton is opened. This requires a longer form of insert, a narrow multiple fold and breaking the insert over the end of the container. They can be inserted either by hand or special inserting devices on the cartoning machine at a high rate of speed.

Banded inserts: A banded insert is one which is confined to an uncartoned container by means of bands consisting of various materials. Most widely used is the rubber band. This is strictly a hand application. Other banding materials are kraft paper and transparent cellulose. This operation is usually done by hand, although special automatic machinery can be built. The transparent cellulose band is often used for protection of the under label as well.

Under-label inserts: This form is carried by means of inserting the folder under the label. It can be done by hand or by means of specially built automatic machinery. In some cases, the label portion holding the insert is left unglued in order to allow removal of the folder. There is danger, however, of the folder slipping out in handling. To overcome this, the folder or the label is spot glued which requires that the label be torn in order to remove the insert.

Envelope inserts: In this case, a separate envelope is labeled to the back of the container by hand or labeling machinery and the folded insert is placed in the envelope by hand.

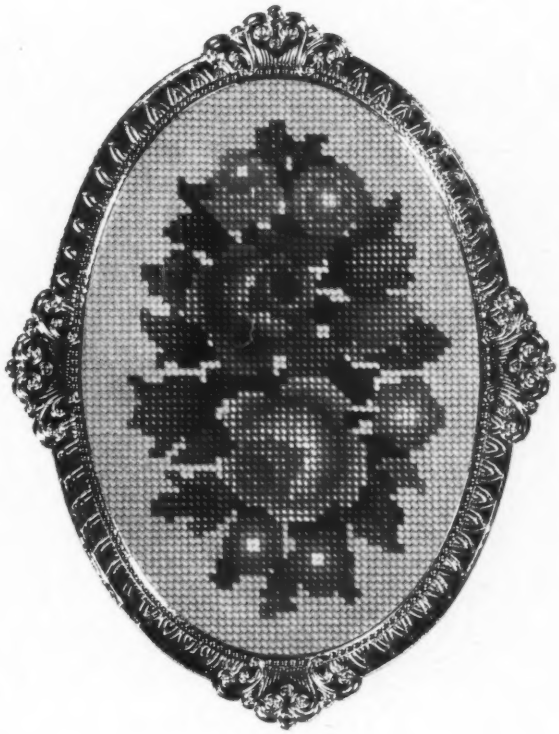
Main drawbacks of this form are the bulkiness of the combined envelope and insert and the inaccuracy of spot labeling at high production speed. Its commendable point is to be found in the envelope serving as a container for re-insertion after the insert is read by the consumer.

Cross References: The Food, Drug and Cosmetic Act, page 20; State and Local Laws, page 28; Labeling Machines and Devices, page 420; Carton Loading and Closing Equipment, page 438; Package Printing Machinery, page 490.

Acknowledgment is made to Robert Rea Brown of Outserts, Inc. for aid in the compilation of the data upon which this article is based.

Petit-Point

A CAMEO CREATION



A Printing & Embossing Technique perfected by

CAMEO

DIE AND LABEL COMPANY

DESIGNERS and CRAFTSMEN

154 WEST 14th STREET

NEW YORK, N.Y.

WATKINS 9-8484

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Beauty Sells

Appearance **of product and package—in a word, Beauty—is a factor in modern merchandising which no marketer can afford to overlook.**

One distinctive method of achieving appealing merchandise is through the use of embossed vari-colored labels, tags and box tops.

Cameo craftsmen have earned an enviable reputation in packaging, and related fields, for their ability to create salesworthy designs and produce them rapidly and economically. The great care and pride our artists, engravers, printers and finishers take in their work is your assurance of a successful, satisfactory solution to your packaging problems.

CAMEO DIE *and* LABEL CO.
154 WEST 14*th* ST.
NEW YORK, N. Y.

IN CANADA: CAMEO METAL SEAL & LABEL CO., LTD., 371 DOWD STREET, MONTREAL

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ON ATTAINING A MAJORITY

When a boy reaches the age of twenty-one he suddenly becomes a mature man.

We, as a company, were twenty-one years old on May 20, 1941. Yet we do not feel that congratulations are in order.

For, if we were not mature when we started, we would not have existed. If we had merely existed, we would not have lived long. And if we had aged perceptibly, our customers would have gone to browse in greener fields.

We prefer to let the entrance of our enlarged plant, shown on this page, speak for the occasion. It symbolizes growth, expansion, to meet the new problems of new days; a milestone on the path of progress. It is a modern frame of reference to meet the future *today*.

We thank our customers, leading packagers of foods, drugs, cosmetics, confectionery, tobacco and a host of other nationally famous products, for the business they have given us—the reason for our growth. Their label, printing, lithographing, engraving and design problems will unceasingly continue to be given the same careful consideration they have received in the past, as time goes forward.

The National Color Printing Co., Inc.

FINE LABELS • PRINTING • LITHOGRAPHING • ENGRAVING • DESIGN • WRAPPERS

930 E. Monument Street **Baltimore, Maryland**

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Collar band: This usually takes the form of a single sheet with a die-cut hole. However, Neher-Whitehead & Co. of St. Louis have developed a patented form-fitting collar which has been used extensively in the dairy field. These reach the dairy sealed together ready to go on the bottles.

Special banded label: This form consists merely of a printed strip of paper or other material which is wrapped around the container or product. A special form called Ad-Seal-It can be applied automatically in bread wrapping machines. It gives an overlap sealed band around the wrap which carries the consumer advertising message.

Extra wrap: This form consists of a secondary wrap around the container which serves primarily to carry package advertising. The best example is to be found in the extra wrap on the Crisco can where the inside surface of the wrap is devoted to recipes.

Tag form: With this method, a string is used through the eyelet of a card, folder or booklet to tie it to the merchandise. This is most commonly done with such utensils as kitchen ware which do not offer opportunity for other means of package advertising. It is usually a hand operation.

The Outsert form: This consists of a folder so constructed as to remain confined on the outside of a bottle, jar or carton. It will not open up in shipment or on the dealer's shelf, yet is readily opened by the consumer. No carton is necessary nor is a band needed to confine it to the container since it is labeled directly to the container surface. Outserts are supplied complete ready for application. They can be labeled onto the container by hand or by any standard semi-automatic or automatic labeling machine at regular labeling speeds.

A new development which has made regular canned products, such as fruits and vegetables, available for this type of consumer promotion is the Outsert labeling machine. It is a high-speed labeling unit that will spot label Outserts on the outside of containers at speeds up to 200 units per minute. This can be set into the production line and maintain normal can production speeds without additional handling.

Types of package inserts. Rear row: Branded insert with transparent cellulose band, over-end insert, machine applied; collar label, hand applied; inner-carton insert, machine or hand wrapped; Outsert applied to bottle. Front row: Neck band insert, applied to bottle; under-label insert and envelope insert.

PLASTICS

Section Ten

Pages 317 to 344

PLASTICS FOR PACKAGING

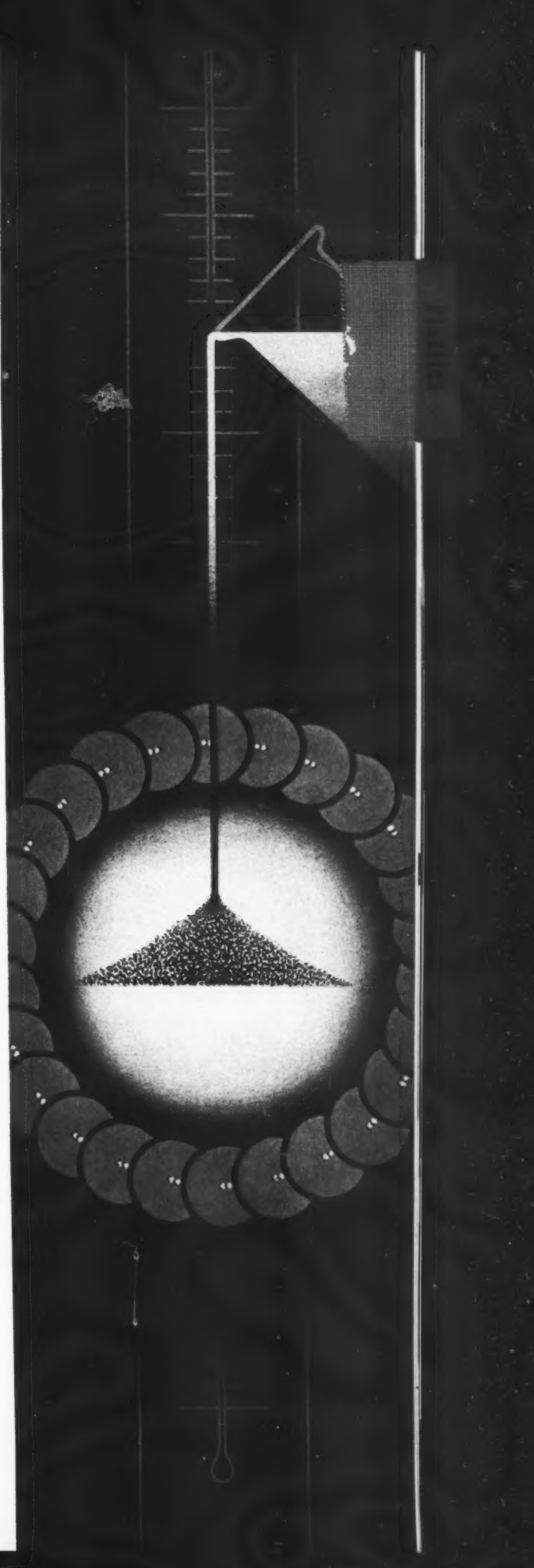
THERMOPLASTIC MATERIALS

THERMOSETTING PLASTIC MATERIALS

CAST PLASTIC MATERIALS

PLASTIC MOLDING METHODS

STOCK MOLD PLASTIC CONTAINERS



XUM

Plastics for Packaging

Plastic materials, once a novelty in the packaging field, now occupy an accepted place among the basic materials of packaging. In the articles which follow, the different types of plastic materials are discussed in some detail. It is necessary, however, for the prospective user of plastics to recognize certain fundamentals before considering which type of material might best suit his particular needs. First among these fundamentals is the fact that plastics are sturdy, long-lived materials best suited to use as containers or container parts where continued use after the product has been sold is to be anticipated. For this reason, they have captured a very large portion of the closure market. For this reason also, they are frequently used as set-boxes for cosmetics, tools, jewelry, silverware and a host of other products.

But long life is but one of the many packaging advantages offered by plastics. A second and equally important factor is the attractiveness of plastic materials and the variety of effects which may be achieved with them. Plastics of one type or another may be obtained in every shade of color from pure white to the darkest black. Plastics may be obtained in transparent forms, translucent forms and opaque forms. Plastics may be fabricated into an infinite variety of shapes. They may be decorated in a number of ways, including roll leaf stamping and other forms of printing.

Thus, from the point of view of consumer appeal, plastic containers offer the designer an extremely wide range. From the point of view of cost and the results achieved for a given expenditure, plastics suffer, to a degree, from limitations that do not apply to all other packaging materials. The plastic raw materials vary greatly in price among themselves, but all of them are relatively expensive materials. For most plastics which are fabricated by a molding process, a substantial charge must be added to amortize the expense of molds. Thus, most plastics are too expensive to utilize on short runs of packages for limited production products. The high amortization charge for molds, plus the relatively high cost of materials, makes other materials frequently more desirable when the run of packages is short.

Lengthen the run, however, and a different situation begins to arise. The amortization charge per piece drops proportionately. The economies incident to the elimination of hand fabrication steps begin to become apparent and as a run increases, a break-even point appears (varying, of course, with each plastic package) where

Cross References: Thermoplastic Materials, page 320; Thermosetting Plastic Materials, page 322; Cast Plastic Materials, page 330; Plastic Molding Methods, page 332; Stock Mold Plastic Containers, page 340; Plastic Displays and Fixtures, page 366.

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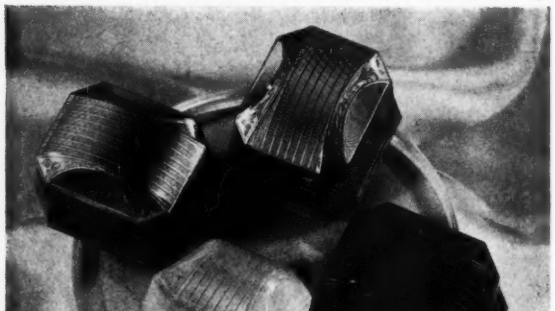

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1. A group of ring boxes molded of different colored materials from the same mold and thus demonstrating one of the advantages offered by plastics. **2.** A novelty closure-pouring spout molded of alcohol resistant polystyrene material. Courtesy Bakelite Corp.

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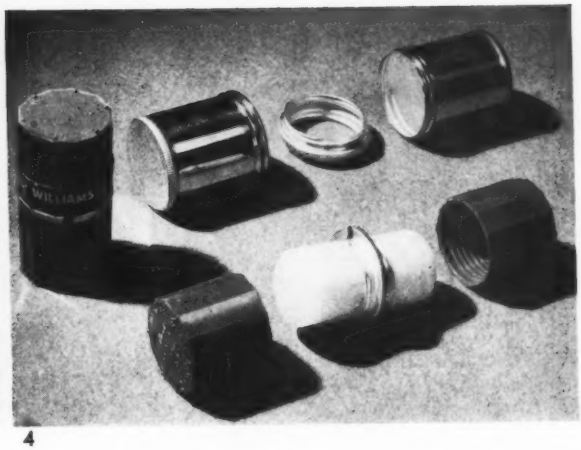

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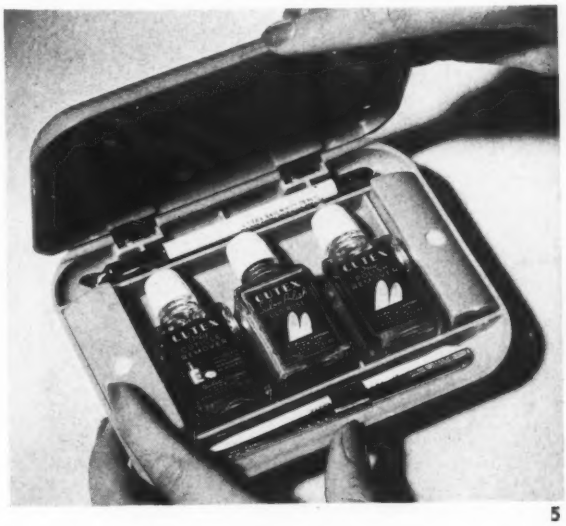
3. The transparency of some plastic materials permits their use for display boxes such as this International Silver chest. 4 Plastics contrast with metal in this shaving stick holder. A single mold is used to form both ends of the plastic holder.

the plastic package comes into price competition with its hypothetical alternative.

Not all plastics fall into this category. Some plastic containers, and a larger number of displays, are fabricated from sheet, rod and tube materials. Here die costs are eliminated and hand labor costs, which do not decrease particularly much with an increase in the length of a run, are substituted. Many packages and package parts do, however, fall into the molded category where the length of the run tends to determine the ultimate cost.

In the case of plastic closures and of certain plastic containers, this mold cost factor has been largely eliminated by what amounts to the cooperative use of molds. Mold closures and some packages are available from stock molds owned by the plastic molder or closure supplier. Thus the package user may purchase but a small portion of the total output from these molds with the knowledge that the amortization cost on the mold has been spread over a very large number of units. As against this advantage, however, he discards the use of a box or closure exclusively for his own packages.

In addition to color and design factors inducing the use of plastics, there are a number of other considerations of a protective nature. These have operated particularly in the closure field, although to a lesser degree they apply to packages and other package parts as well. Many of the plastics are highly inert materials and hence are suited for use where other materials would be affected either by the product or by the handling the package receives. An outstanding instance of this sort is involved in the use of polystyrene materials for closures on acid-containing bottles. Since the material is not affected by acids, it provides an ideal solution to the protective problem presented by the product. At the same time, manufacturers have taken advantage of the merchandising possibilities in the colors in which the material is available. One manufacturer utilizes closures molded of differing colors of transparent polystyrene material to identify for the user different laboratory acids. By so doing, he eliminates, in large measure, the contamination which formerly occurred when closures were inadvertently transferred from one container to another.



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5. A two-piece hinged plastic set-box. The partitions and dividers are integrally molded in a single operation.

The scratch resistance and wear resistance of plastic containers of all types provides an ideal form of protection against handling during the course of demonstration and sale. Thus, plastic cosmetic kits may be placed on open display without fear of staining or scratching despite excessive consumer handling.

The attainment of such qualities as strength, resistance to shattering, etc. in plastics is, in very large measure, dependent upon the way in which the plastic piece is designed. At the same time, design plays a very important part in determining the weight of the piece and hence the cost of the material that must be put into it. Experienced plastic engineers know how to work cross-sections to an ideal lightness and thinness.

XUM

Thermoplastic Materials

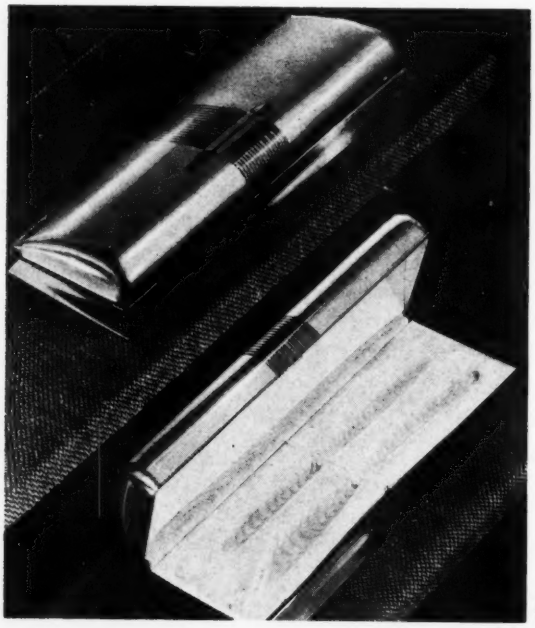
Thermoplastic materials available for packaging purposes include cellulose acetate, cellulose acetate butyrate, acrylic resins, co-polymer vinyl resins and polystyrene resins. Within this group are presented an almost infinite range of colors as well as wholly transparent water-clear resins.

The thermoplastic materials are so called because they may be softened by the application of heat. While this facilitates their formation into closures, containers and container parts, it precludes their use in applications where heat in substantial quantities will later affect the molded article. The materials are both injection and compression molded and because of their wide range of colors lend themselves particularly to packaging applications. Within the last year or two, numerous packagers have found it possible to take advantage of the transparency available in certain of these materials to produce sturdy, rigid containers or container parts which could be seen through, and through which a view of the product could be had without requiring the opening of the container.

The materials as a group lend themselves well to finishing operations and have a toughness when finished which well suits them for use on threaded closures and similar parts. They are resistant to breakage to a high degree and thus further well suited for packaging.

The acrylic resins, being available as transparents, are utilized for portions of displays, for sign letters, for transparent box tops and similar packaging applications. One interesting new use has involved the formation, into

Cross References: Plastics for Packaging, page 318; Thermosetting Plastic Materials, page 322; Cast Plastic Materials, page 330; Plastic Molding Methods, page 332; Stock Mold Plastic Containers, page 340; Plastic Displays and Fixtures, page 366.



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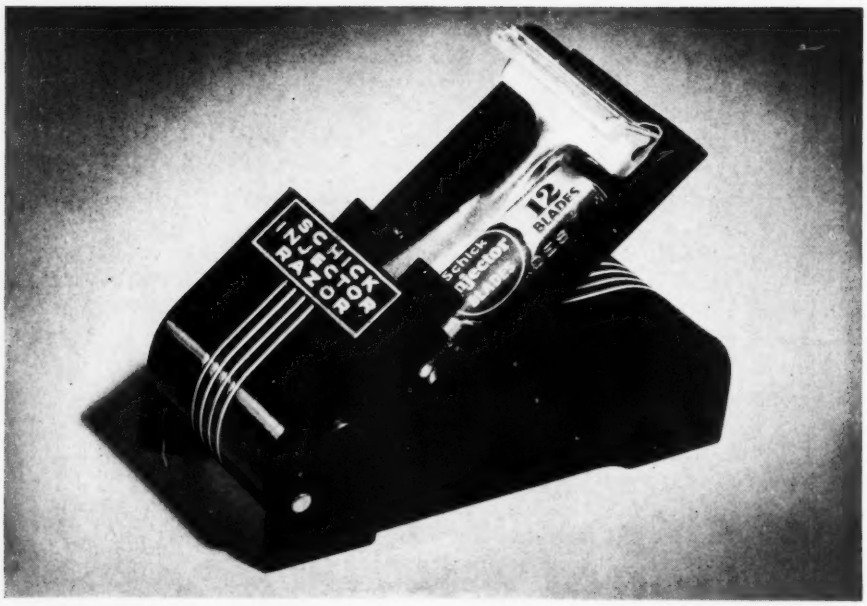

1. A black molded acetate base and streamlined transparent acetate lid combine to form this attractive pen and pencil box. The box top is coated on the inside with opaque color to give depth to its design. Molded by Cardinal Corp. **2.** Hinged display package with interior compartments for razor, new and old blades. Molded of acetate. Photos courtesy Tennessee Eastman Corp.

a transparent molding, of an actual lens designed to magnify a portion of a small mechanical product so that the consumer can examine its details without opening.

Vinyl resins have within the last year been used for a number of closure applications and for dispensers where the product being handled might affect other plastics and where the toughness of the material suits it to withstand hard usage. The vinyl materials are odorless, tasteless, non-toxic and non-warping and have good water and chemical resistance.

Polystyrenes have been widely adopted for closure use in the packaging of mineral acids because the material is highly resistant to high acid concentrations. Change of closure color facilitates identification and association of closure and jar and thus prevents contamination of acids by the transposition of closures from one container to another. Polystyrenes have good resistance to alkalies as well and are not affected by alcohol or water. For this reason, and because they do not give off offensive odors or taste, they are being widely used for molded liquor dispensers and pouring devices, particularly the types designed for bar use.

Thermoplastics are particularly suited to injection molding, a process in turn particularly suited to the fabrication of small articles, such as package parts, and to long run volume production. While thermoplastic materials are more expensive generally than thermosetting materials, numerous opportunities for their use have arisen where the added expense is compensated for by the lighter weight of the finished part.

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3. Cologne bottles, the upper or closure portions of which are molded of cellulose acetate and then gilded. Photo courtesy Bakelite Corp. **4.** Oil dispensing container molded of acetate butyrate. Label printed on cellulose acetate sheet is inside container and seen through walls. Photo courtesy Tennessee Eastman Corp. **5.** Powder and mascara containers formed of acrylic resin. Photo courtesy Röhm & Haas Co., Inc.

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XUM

Thermosetting Plastic Materials

The thermosetting plastics—i.e., those which once molded change their chemical construction and assume a permanent unchangeable form—include a number of subdivision groupings. For the general purpose of identification, the two major groups of thermosetting plastics are phenol-formaldehyde molding compounds and urea-formaldehyde molding compounds.

Phenolic plastics are the oldest thermosetting plastics. Ten years ago the use of phenolics in the packaging field would have been talked of as poundage. Today, while similar figures might be employed, they would denote tonnage. In their early days in packaging, there were a few molded caps and boxes, but it has only been in the last few years that plastics have really come to the front. Now they are near the top of the list of packaging materials. There are many reasons why this rapid advancement has taken place.

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1. Cosmetic containers and closures molded of urea resins. Photo courtesy Plaskon Co. **2.** Card and cigarette boxes molded of phenolic resins. Photo courtesy Durite Plastics, Inc.

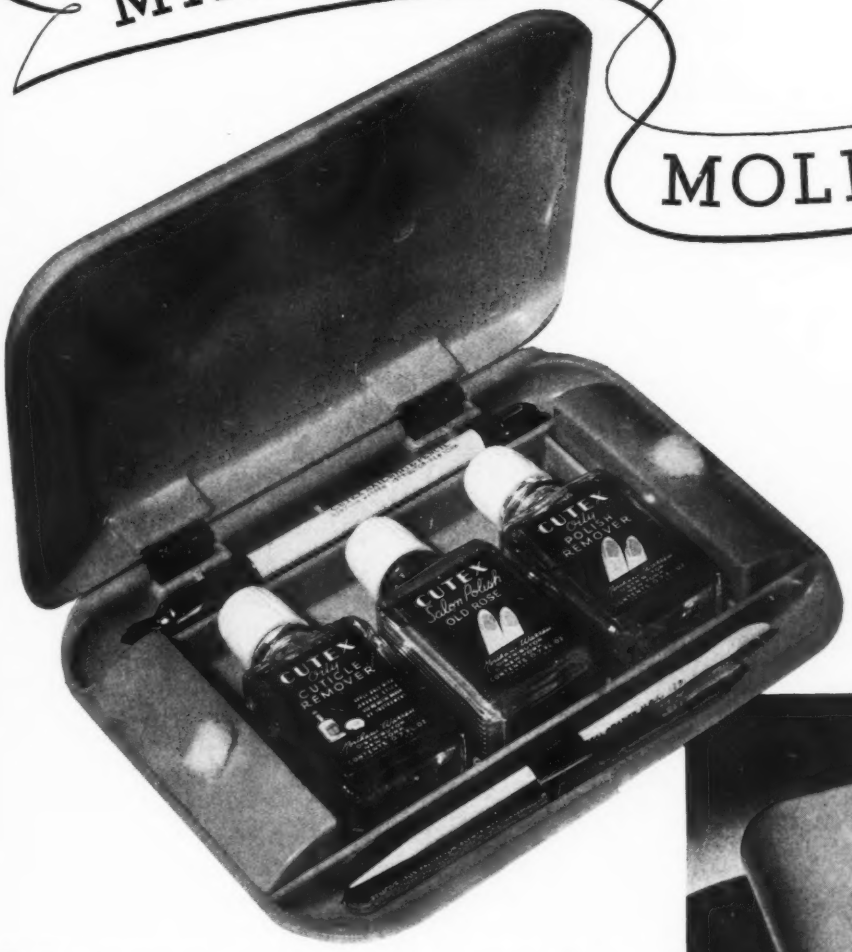
When these phenolic plastics first made their appearance, they found quick acceptance by the buying public. Most people like plastic articles—a great enough incentive to cause any merchandiser to investigate their use. When they did, they found in this phenolic plastic a material that had exceptional designability—that could be formed into almost any shape or design—that was available in many colors. The finished articles came from the mold ready to use with a high lustre molded in that couldn't be worn or washed off, wouldn't tarnish or rust. They were poor conductors of heat or cold and had excellent mechanical qualities such as light weight with great strength, resiliency to shock and low density. Above all, they found costs to be comparatively low. They found a few disadvantages which it is well to point out for comparative purposes. Consider closures, for instance. In the older days, a standard material was used which had a slight odor, was somewhat resistant to acids and mild alkalies, had little non-bleeding and bleaching qualities, was not particularly flexible from the molder's standpoint and did not cure fast enough for low cost production runs.

Today, the buyer finds none of these disadvantages. Phenolics are available today that are completely odorless; that have great resistance to acids and mild alkalies; that are non-bleeding and non-bleaching. He finds practically any color except certain pastel shades in the thermosetting phenolics. In the opaque thermosetting group, he finds richer or denser blacks brought about by improved dyestuffs. He finds far greater strength and durability. And from the cost standpoint, he enjoys lower prices in the thermosetting phenolics. This is because of improvements in manufacturing, molding machinery and more flexible materials. Molding materials have recently been put on the market which may be automatically stripped from the mold while hot—a tremendous advance over former materials. Also, a material has been formulated which has cut down cure time in the press from around eighty seconds to thirty seconds. It's quite easy to realize what these two improvements alone have meant from the cost angle on comparatively large production runs.

There are several factors which the packaging buyer

Cross References: Plastics for Packaging, page 318; Thermoplastic Materials, page 320; Cast Plastic Materials, page 330; Plastic Molding Methods, Page 332; Stock Mold Plastic Containers, page 340; Plastic Displays and Fixtures, page 366.

MASTERS OF MOLDING



Many interesting problems are solved by this Plaskon kit for the famous Cutex Nail Polish and accessories winning Honorable Mention in the 1940 Modern Plastics Competition. A number of compartments are molded into the case. Two separate cotton dispensers are also molded and snap into the bottom half of the kit. So accurately are these parts molded that no device is needed to hold them in place other than rigidity of the material itself. Extra strength is built around the hinges to allow of much opening and closing without damage to the case.

The design itself, is unique. The case is flat and streamlined, fits easily into a handbag or travelling bag. The name "Cutex" and two lines are the only decoration—molded and then brushed with white. The entire kit is of a lovely soft blue Plaskon. An interesting opening arrangement may be noted. The rim of the base and the rim of the lid do not quite meet around the edge. Thus, one may open the case easily by holding one side and opening the other.

Norton has long been famous for fine work in all plastics. We are thoroughly equipped, competently staffed.

The foremost producer of plastic packages in the United States.

Norton Laboratories, Inc.

Lockport, ... New York

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should give heed to when considering a phenolic plastic container or closure. Plastics are generally impractical for very small runs unless the item packaged is in the higher priced group where finery in dress can be well afforded. There are, of course, hundreds of stock molds available through the many custom molders. These can often be employed to great advantage—even for comparatively small runs. Generally, however, a private mold is highly desirable to permit individual design and when considering this mold there are a few principles which may be followed to advantage. The first step would really be to call in a custom molder or a service engineer from one of the materials manufacturers who will go over these and other points carefully. Design, naturally, is of the greatest importance. Designing for plastics, that is from the standpoint of making finished blueprints, is not at all like designing for metal stampings or castings, for example. Actually, the best advice is to disregard what you may know of metal stampings and castings because the characteristics of plastics are entirely different.

If an article requires strength throughout, there are several methods of securing it. Domed or hemispherical shapes are stronger than flat topped ones. Fillets at corners or filleted ribs are advisable. Extra thickness of material at points of stress may be obtained by beading or reinforcing ribs. Attachment or assembly inserts should be at filleted corners if at all feasible. This helps to keep "flow marks" from the molding operation where they show least. Shapes that call for loose sections in a mold to obtain undercuts should be avoided if possible for economical molding. Small side holes can often be drilled and large ones continued to the top to draw straight. Ribbing can be used to hide "flow marks" under the hole. Threads can be molded into round parts and, by means of loose mold sections, into other shapes. In so doing, the wall thickness should be figured from the inside of the thread instead of overall. Very sharp edges may be obtained, but are generally inadvisable from the handling standpoint and it is best to "break corners" slightly. Stippled effects and sharp-edged lettering sometimes cause sticking in the molding operation. Fine, straight draw ribbing and round edge lettering will definitely assist in eliminating this possibility. Incised lettering and design in plastics mean higher die cost than raised lettering. When incised lettering is most desirable, it is best to employ a narrow style if such lettering is to be wiped-in. Double or triple line lettering is better for wider letters because there is less likelihood of the pigment being wiped or worn off. "Low" bas-relief designs and letters catch highlights as well as do high relief decoration, yet are more easily kept clean.

Generally speaking, anything that can be engraved in steel can be molded on the surface of a plastic piece. Relief and intaglio sculpturing, inlays of metal or other contrasting materials, decals, labels, branding, are the

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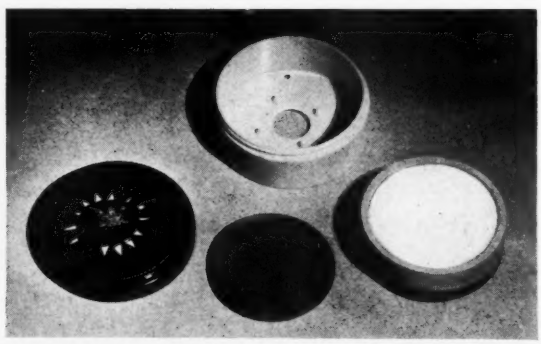

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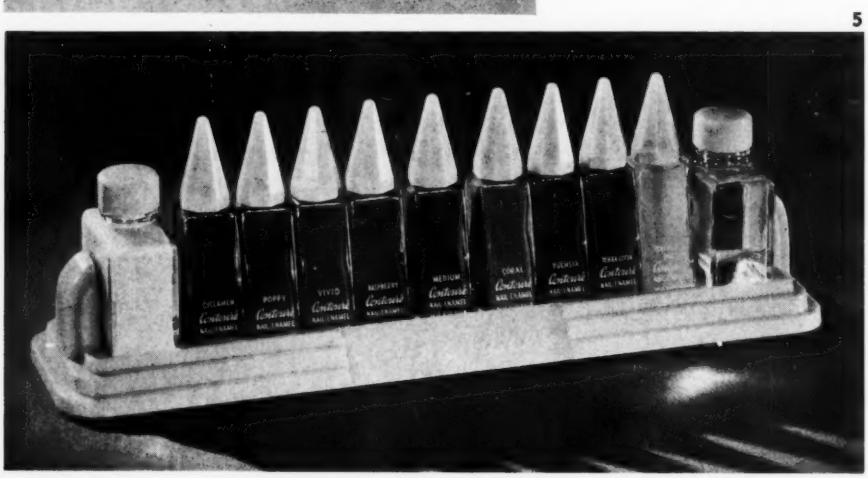

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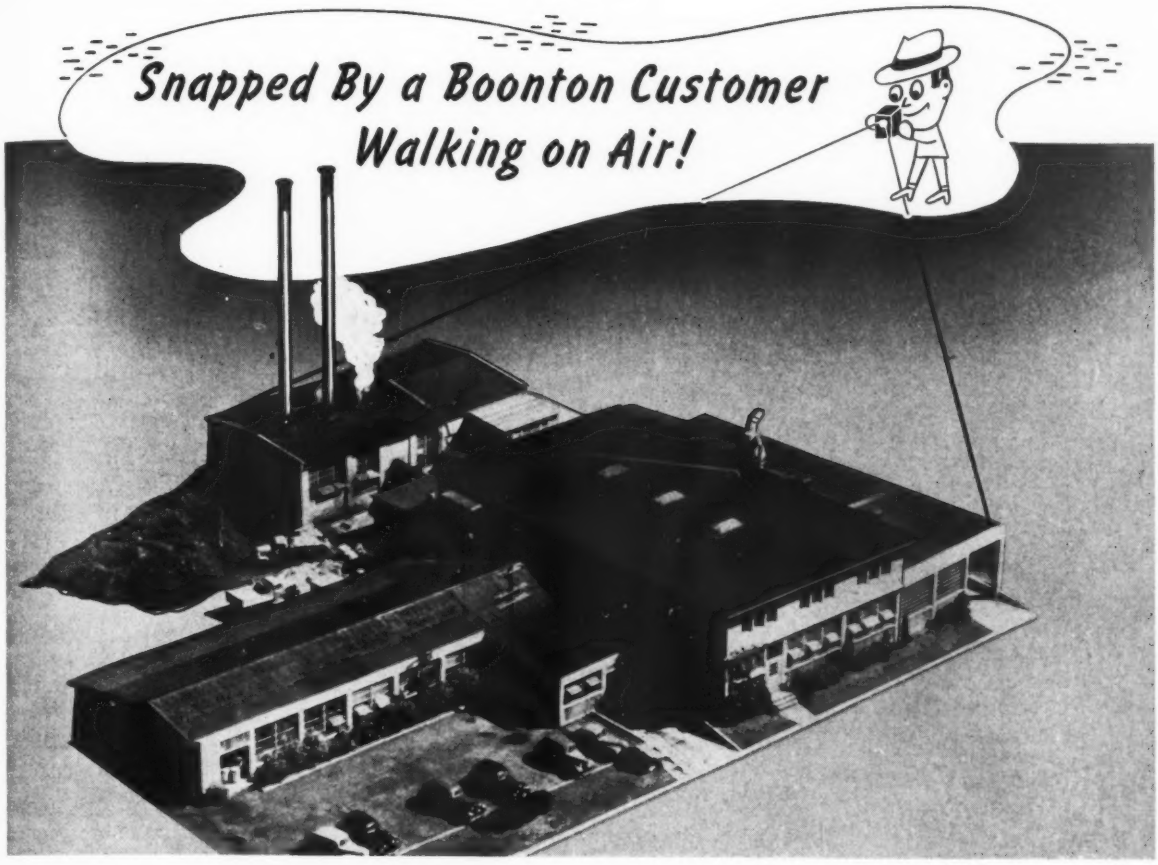
3. Talcum powder jar and shaving bowl molded of phenolic materials. Courtesy Bakelite Corp. **4.** Shaving bowl holder and cap molded of contrastingly colored ureas and phenolics. Photo courtesy Armstrong Cork Co. **5.** A urea display base matches the urea closures of this nail polish dispensing set. Photo courtesy Plaskon Co.



TO US, they are molded pieces, a cover, a bottom, to be assembled with hinges, perhaps a medallion to set it off.

We know the molding business, we were born and brought up in the trade. It is our function to guide your design from the fabricating angle, to advise against a sharp corner here, a fragile section there, to recommend the best among the many available plastics.

Perhaps we shouldn't tell you, but we are not merchandising experts. We don't pretend to say what will appeal to Mrs. Hope Sheelbyit. We merely iron out the manufacturing troubles, design and make the tools and see that you get all you need when you need it.

If such a modest contribution to your program of packaging—or other plans involving molded parts—appeals to you, why not drop us a line and let us discuss the matter with you. Or come to Boonton and see for yourself why the wheels go round.

Perhaps that booklet would be a good introduction.

"A Ready Reference for Plastics," written for the layman, is now in a new edition. If you are a user, or a potential user of molded plastics, write for a FREE copy of this plain, non-technical explanation of their uses and characteristics.

BOONTON MOLDING COMPANY

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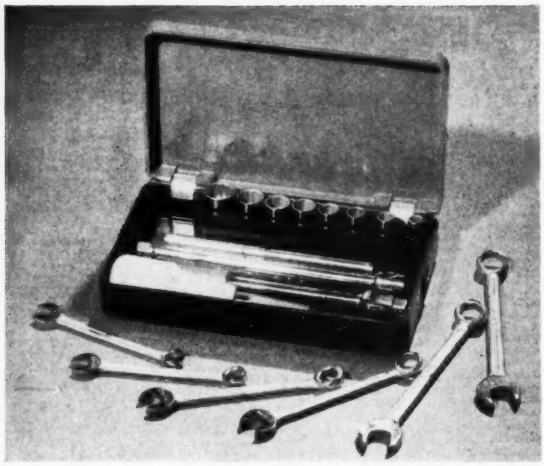

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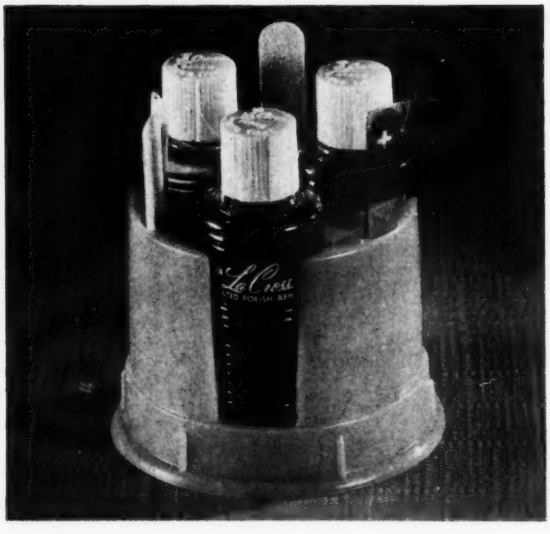

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6. Tool box molded with integral partitions and compartments and equipped with patented spring hinge. Photo courtesy Durez Plastics & Chemicals, Inc. **7.** Capsule container with phenolic base and acrylic resin transparent cover. Photo courtesy American Insulator Corp. **8.** Set-box holding three nail polish containers and accessories. Photo courtesy Bakelite Corp.

most commonly followed methods of marking plastics. Incidentally, the field is still wide open for smart use of other materials as components of the plastic piece. Leather, real or imitation, wood, rope, canvas, cloisonne, printed papers, cork, laminated materials, glass, reed, fabrics, can all be combined with plastics for new and strikingly unusual effects. Actually, so little has been done along this line that it does not seem unreasonable to predict that a swing in this direction would result in materially increased sales of almost any item so packaged.

The actual manufacture of the molds or dies used in the production of plastic pieces is indeed a specialized line in itself. Therefore it appears advisable to re-emphasize the importance of having a custom molder or plastic manufacturer's service engineer right in on the ground floor when the buyer is considering a plastic package—be it a container for paper, metal, cosmetics, liquids or what-nots. They know the problems of molding. They know materials and will be quick to verify the proper one for a specific job should there be any question at all.

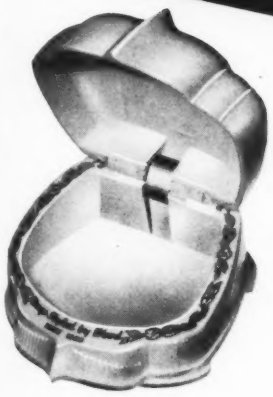
Urea plastics are of the molding type and are available in lighter shades of color than most of the phenolic group. This is because urea syrup, before the condensation process which reduces it to powder has taken place, is a water-clear liquid. It, therefore, gives full value to pigmentation and even pastel shades may be definitely controlled. Even white and ivory are common in ureas. To the manufacturer whose package depends upon daintiness of color for its selling appeal, urea may be the ideal molding compound, provided, of course, that its chemical properties are suitable to the job. Although higher in price than the phenolic compounds, except those lighter shades recently introduced, this advantage of color and translucency is often worth the difference in many applications. Urea moldings are insoluble and inert, resistant to greases, oils and solvents. They have no taste or odor and there is little or no tendency to show dirt even with constant handling.

Ureas have been used widely for tube and bottle caps because their broad range of colors offers a distinctive note of attraction while goods are on display. They are frequently chosen for better harmony with labels than would be possible with dark colors. They are especially suitable, too, for intimate use in the boudoir and bath and for that reason have found general favor in packaging cosmetics and toiletries.

Ureas are often used in conjunction with plastics of the phenolic group. Their gay colors contrast pleasantly with the brilliant blacks and dark shades of the less expensive material. Urea covers of ivory or pastel shades create a harmonious ensemble with the smooth lustrous finish of black phenolic boxes and jars.

Urea moldings combine harmoniously with the newer transparent resins providing the color they, in themselves, lack. Rich colorings supply a background of warmth and appeal which accentuate the cold clarity of the transparent part.

The TRIPLEX HINGE* Is one of the EXTRAS of Rathbun MOLDED BOXES



Triplex Hinged Jewelry box with molded bearing surfaces. Open to the fixed angle. Closed, giving perfect protection to the contained merchandise.

Triplex Hinged ring box with inserted metal bearing surfaces, for special requirements Open, Closed.

Watch boxes for Elgin, Gruen, and Longines-Wittenauer watches. Ring boxes for quality rings.

This famous hinge is incredibly simple in construction and just as amazing in its action. Hinge abutments and catches are eliminated completely from packages equipped with the Triplex Hinge. The opening angle of the box cover can be controlled to any necessary degree. The Triplex Hinge is strong and will stand up under a good deal of punishment, consistently opening to the fixed angle and giving perfect closure.

*U. S. Pat. No. 1,833,305; 2,046,133.

New finishes, decorations, designs and economical methods of production are further features of Rathbun plastic box-making service. The advantage of the patented Rathbun Triplex Hinge, the simplest and most foolproof hinge ever devised for plastic boxes, is another "extra" in Rathbun service.

Our designers will gladly offer appropriate and distinctive ideas for your product's package.

Rathbun **MOLDING CORPORATION**

SALAMANCA **NEW YORK**

CHICAGO OFFICE, 35 E. Wacker Drive
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TO FINISHED PACKAGE

Guiding each rough sketch of a Textolite package in-the-making is the all-important factor in economical and successful manufacture—an intimate knowledge of the use of plastics.

For years, General Electric functional designers and stylists have been working with plastics alone. They know the characteristics and possibilities of the material. They understand the problems of molding. And they know what it takes to make merchandise sell.

It is this unique service that helps make General Electric a leader in the plastics packaging field—a service which assures you of a Textolite package with beauty, quality and sales appeal.

When confronted with your next packaging problem, avail yourself of General Electric's plastics design service. Contact your nearest G-E Plastics Department representative in New York, Chicago, Cleveland, Detroit, Fort Wayne, Philadelphia, Rochester, Lynn or Meriden or write Section PC-1, Plastics Department, General Electric Co., 1 Plastics Avenue, Pittsfield, Mass.

PLASTICS DEPARTMENT

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1. Cast tubes and sheets are combined to form these colorful powder boxes. 2. The female figure in this display is cast of plastic resin in a rubber mold. Photos courtesy Catalin Corp. 3. Display plaques cast in Catalin and Monsanto phenolics. 4. Display base, holding three glass containers, molded of cast resin material. Display head in background a casting of transparent phenolics. Courtesy Catalin Corp.

Cast Plastic Materials

The cast plastic resins are materials which are supplied by the manufacturer to fabricators pre-cast into definite shapes. They are available in sheets, rods, tubes and in a wide range of standard shapes. Their fabrication is by machining and assembling rather than by molding. They have an advantage in package fabrication where a limited number of units is required because mold costs are entirely eliminated. They afford colors practically without limit and all degrees of transparency or opacity are available in these cast materials.

They are formed in inexpensive lead molds, the principal cost being for a mandrel which must be shaped from steel to the exact dimensions and shape of the interior of the mold. Mandrels so formed are dipped in hot lead which adheres to the metal and may be driven or "shocked" off when cold. This operation takes but a few minutes and as many molds may be made from each mandrel as required. Once made, the molds are filled with the liquid resin and placed in ovens where the temperature is carefully and automatically controlled over a period of days while the material cures, or polymerizes to its hardened state. The cast shape reproduces the exact finish of the mold and little finishing other than smoothing the "pouring" edge is needed. Polishing is seldom required.

A more recent development involves the use of rubber molds in which case complicated shapes, such as small statuettes, can be cast. The stretchable rubber mold is stripped from the mold after the latter hardens.

A number of stock cast resins are available in the shape of boxes, box bases, tops, etc. Many manufacturers of cardboard boxes have found it practical to use small bars and knobs cut from rods of cast resin as decorative handles. The wide range of colors of the cast materials give a brilliant contrast with paper, fabric and leather box coverings. They have also been used as knobs and handles in conjunction with transparent boxes and displays made of rigid transparent sheet materials.

In the display field, they find application as display decorations and, when cut by jigsaw, as letters in signs and for similar purposes. They are also used to form the bases and supports for luminous display letters. The limit of their application is only that of the woodworking tools by which they are fabricated.

Cross References: Permanent and Re-Use Boxes, page 94; Rigid Transparent Displays, page 150; Plastics for Packaging, page 318; Stock Mold Plastic Containers, page 340; Plastic Displays and Fixtures, page 366

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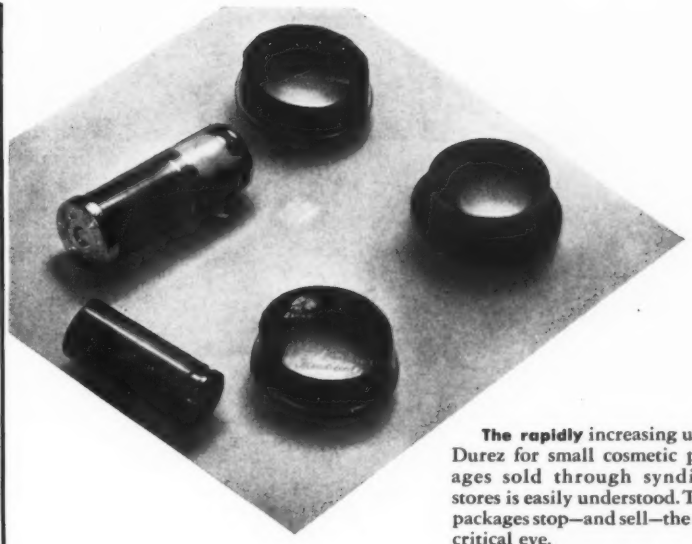
The "EYES" have it... *when it's packaged with* DUREZ!



The rapidly increasing use of Durez for small cosmetic packages sold through syndicate stores is easily understood. These packages stop—and sell—the most critical eye.

WITH more and more *attractive* packages coming on the market all the time —with competing products clamoring louder than ever for consumer attention —you've got to make your package a standout if you want it to stand an even chance against the field.

It's not only a matter of good design—but of the best possible material as well. And if you go by the record, you'll choose Durez plastics!

Durez has helped literally hundreds of manufacturers put "eye appeal" into thousands of packages and closures of all kinds. Durez was a pioneer in this field, and the packaging successes with these modern compounds are legion.

If you want to give your package sparkling color, lustrous finish, strength without bulk, it will pay you to produce it in Durez. You'll find it easy and economical, too, for Durez pieces can usually be formed and finished in a single, cost-saving molding operation! May we help you work out your next packaging problem? For information and samples write—

DUREZ PLASTICS & CHEMICALS, INC.
700 Walck Road, North Tonawanda, N. Y.

The more unusual the closure, the more reason to mold it in Durez—as you can see from this double-duty closure-applicator for Zip lotion.

This Norwich Vitamin display shows what you can do with Durez to sell pharmaceutical products. Here is eye appeal plus product protection.

HOW DUREZ PLASTICS have helped many manufacturers make better products is told in a new booklet, "It's a New Business Custom." It's good reading—and you may find it *valuable* reading.

DUREZ PLASTICS & CHEMICALS, INC.

PLASTICS THAT FIT THE JOB

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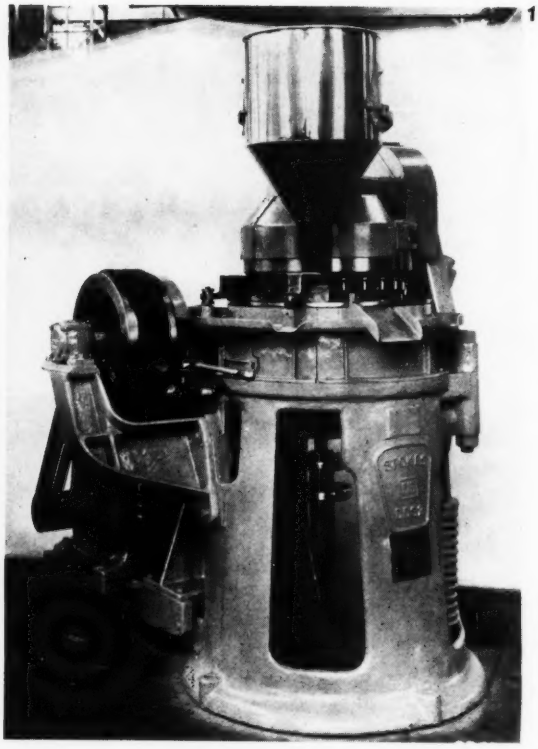
Plastic Molding Methods



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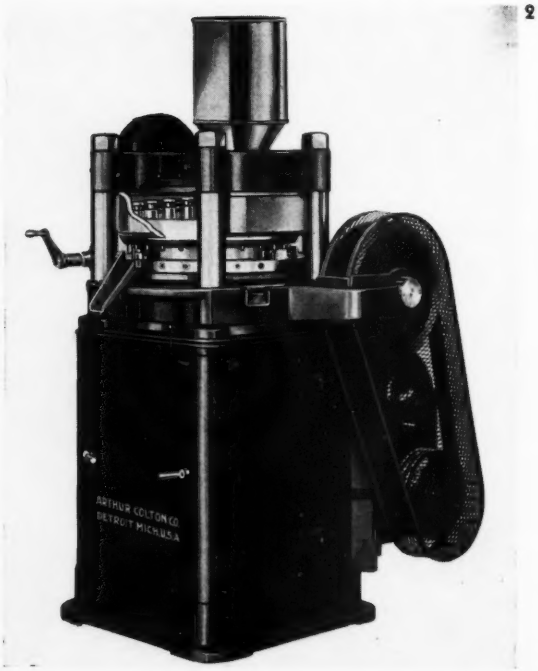

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There are two methods in general use for molding plastics, known, respectively, as the compression molding method and the injection molding method. The former is the older of the two methods and has been in use since the early days of the development of plastics. The latter is a method developed within the last few years and particularly adopted for use with certain plastics.

Compression Molding

In compression molding, molds generally consist of two parts, one attached to the bed of the hydraulic press and the other attached to the hydraulic ram. The plastic material, in powder or pellet form, is inserted into the cavity of the female mold and the other portion of the mold is then depressed by hydraulic pressure. Heat is applied simultaneously, causing the plastic material to flow in the mold assuming the desired shape.

For the general run of phenolic and urea type molding materials, pressures of from 2500 to 4000 lbs. per sq. in. are required. Heat is usually applied by means of steam run through pores in the mold.

On simpler, smaller, molds, hand type molds are utilized. These are assembled and loaded into the hydraulic press by hand. They are heated and cooled by conduction from the platens of the molding press. These latter are steam heated and then water cooled after the mold is closed under pressure. Semi-automatic molds are used for more complicated jobs or larger jobs and are attached to the head and ram of the press. This type is cored or ported for steam heating and water cooling. While semi-automatic molds are more expensive than hand molds, they operate on a shorter cycle and hence are generally more economical for large-scale production.

Both types of molds are usually made with multiple cavities to mold a number of articles simultaneously. The exact number depends, of course, upon the size of the

Cross References: Plastics for Packaging, page 318; Thermoplastic Materials, page 320; Thermosetting Plastic Materials; page 322; Cast Plastic Materials, page 330; Stock Mold Plastic Containers, page 340; Plastic Displays and Fixtures, page 366.

1. Rotary preforming press. Powder is fed from the hopper and discharged in the form of compressed pellets. Courtesy F. J. Stokes Machine Co. **2.** Rotary preformer equipped with variable speed units for adjustment to various compounds. Photo courtesy Arthur Colton Co.

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BRIDGEPORT HAS DESIGNING and ENGINEERING SERVICES TO BUILD UP YOUR SALES

DISPLAYS

of plastics win wide attention and dealer acceptance. The G. Washington display has the original feature of glass supported by an injection molded base. The Feigenspan bar display is another fine example of precision molding. The copy is on the under side of the clear plastic surface, resulting in a display which is easy to clean and always looks new.

PACKAGING

in plastics builds sales! These boxes have been injection molded in a wide range of colors to appeal to the femine taste. Our designers will be glad to work on your packaging problems, toward results that are not only economical but styled to the minute as well.

ORIGINALITY

makes sales click. This A-1 Sauce container brings A-1 Sauce to the table in an attractive and useful holder, designed to improve the appearance of the package without changing the label. Let us help you develop your newest ideas toward sales leadership.

Our plant is equipped for prompt and complete service with designers, engineers, model makers, tool makers, and a wide range of compression and injection molding presses—all under one roof. This complete coordination of all faculties results in moldings of precision and quality at a price that helps you build up your sales.

BRIDGEPORT MOULDED PRODUCTS, INC.

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article to be molded and the capacity of the press in which they are to be used. Usually the cavities duplicate each other and mold identical pieces, although this is not always necessarily the case. Ingenious devices are utilized to secure the ejection of the molded object after molding is complete.

Preforming

While plastics can be fed into the mold in powder form, it is generally found more convenient, speedier and more accurate to compress the powder into tablets or preforms which are then inserted, by the press operator, into the mold cavities. This is accomplished by special machines which are of two general types, the single stroke machine and the rotary. Both work on essentially the same principle in that the molding powder is placed in a hopper and a predetermined quantity or weight is automatically fed to the die or dies. Sufficient pressure is applied to the charge of molding powder in the die to compress these many granular particles into a tablet.

Rotary machines are more generally used for the simpler preforms. Their capacity ranges from 250 to 400 pieces per minute. Single stroke machines are used for larger or more intricate types of preforms and have a capacity of 50 to 150 preforms per minute. These machines are adjustable so that various weight preforms of the same general shape can be made on the same dies. They are also adjustable for hardness of preform.

Automatic Molding

Most compression molding presses require the attendance of a skilled operator who places the powder or pellets into the mold cavities, controls the opening and closing of the press and the timing of the cycle. However, a number of automatic machines have been developed for the molding of small units on a continuous production basis. These machines are hopper fed and operate the

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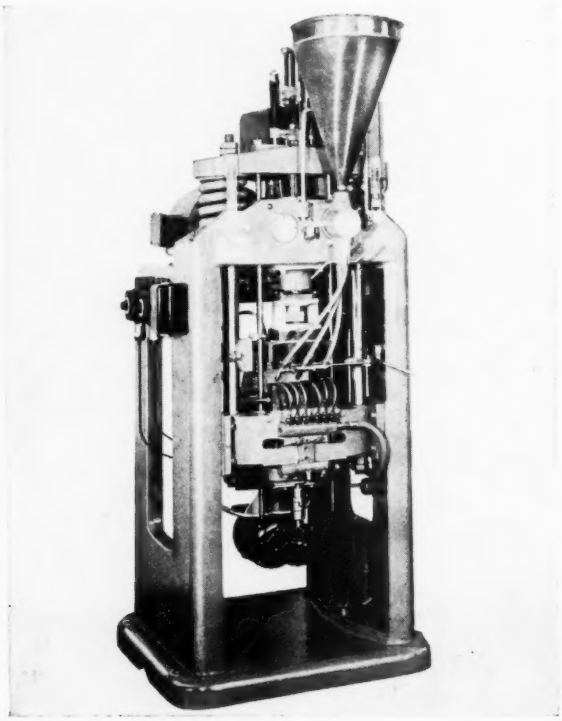

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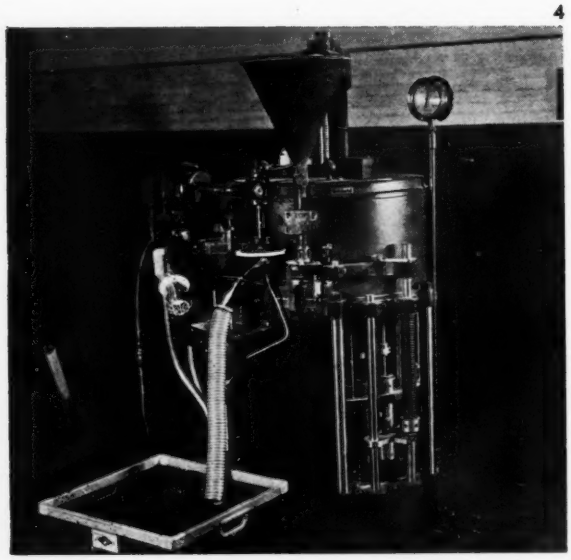

3. Fully automatic rotary press. Measures hopper fed compound, feeds to mold, times molding cycle and ejects parts automatically. Courtesy F. J. Stokes Machine Co. **4.** Lauterbach type rotary press such as is used in forming closures. A continuous motion press, hopper fed and completely automatic. **5.** Typical compression molding operation with multiple cavity mold. Photo courtesy Diemolding Corp.

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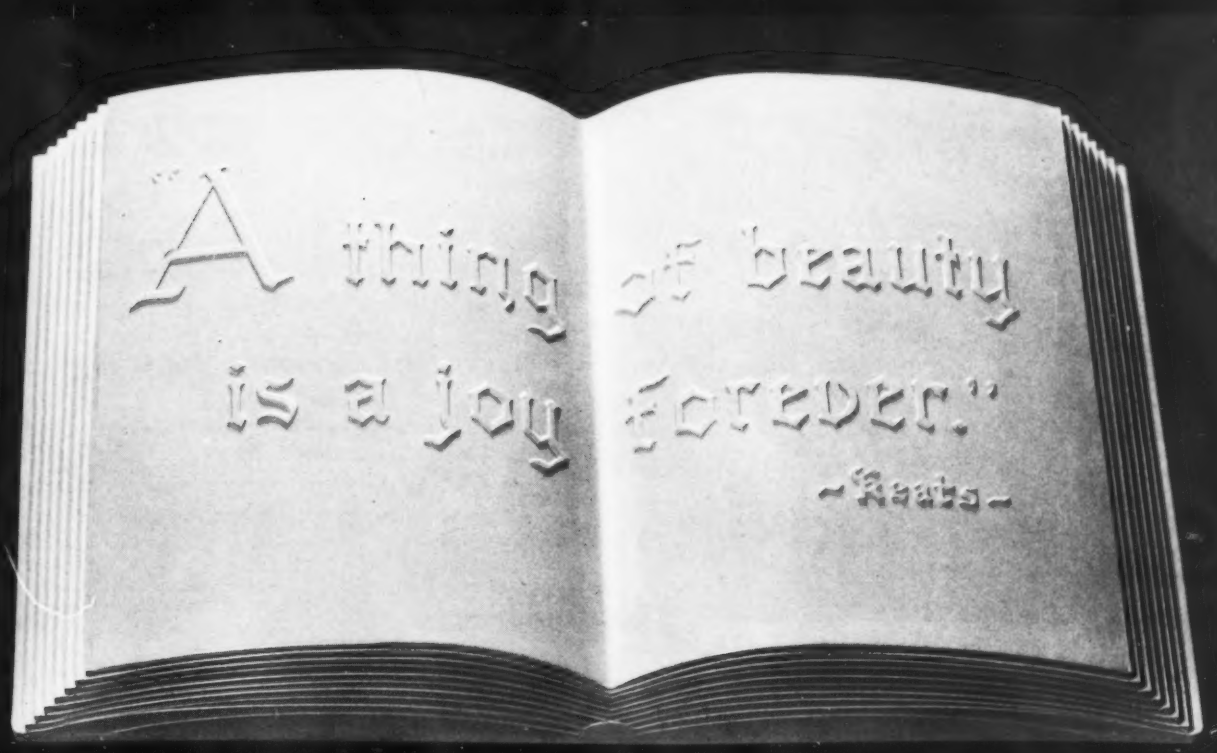

A case for Wrico Lettering Guides. Molded of Bakelite in two pieces. Replacing a costly, difficult to assemble and less practical wooden case.

A case that adds the sales appeal of its beauty to the beauty of its contents.

A thoroughly practical re-use container—whose beauty of design is boosting the sales of an eastern cosmetic manufacturer.

THERE'S A PRACTICAL SIDE TO THIS BUSINESS OF TURNING DREAMS INTO REALITIES

Every package, classic or functional in design, for re-use or to be used but once, starts its life as an idea—a dream. Turning that dream into a practical reality, yet retaining all the dream-dictated qualities of finish, line and design, is Auburn's business.

Better than 60 years' experience in translating the dreams and plans of designers into realities in plastics stands back of every Auburn molded plastic job. Experienced mold-makers, skilled craftsmen and a long series of inspections guarantee the quality and precise perfection of every Auburn job, big or little.

Established 1876

MOLDED PLASTICS DIVISION OF

AUBURN BUTTON WORKS, Inc.

AUBURN, N. Y.—New York, Chicago, Detroit, Cleveland, Rochester, Boston

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single or multiple cavity molds, performing all the operations from loading to ejecting under fully automatic timing cycles.

Since an automatic machine can work continuously, it is possible to get large production by running around the clock and this in turn permits the use of smaller molds with fewer cavities. This saving, plus the labor saving, makes the machines particularly desirable in certain cases where continuous requirements for materials are to be anticipated.

For closure molding, a rotary type of automatic press is utilized in which a series of molds move in rotary fashion, being filled at the start of the revolution and going through the curing cycle to the ejecting stage as the mold wheel rotates.

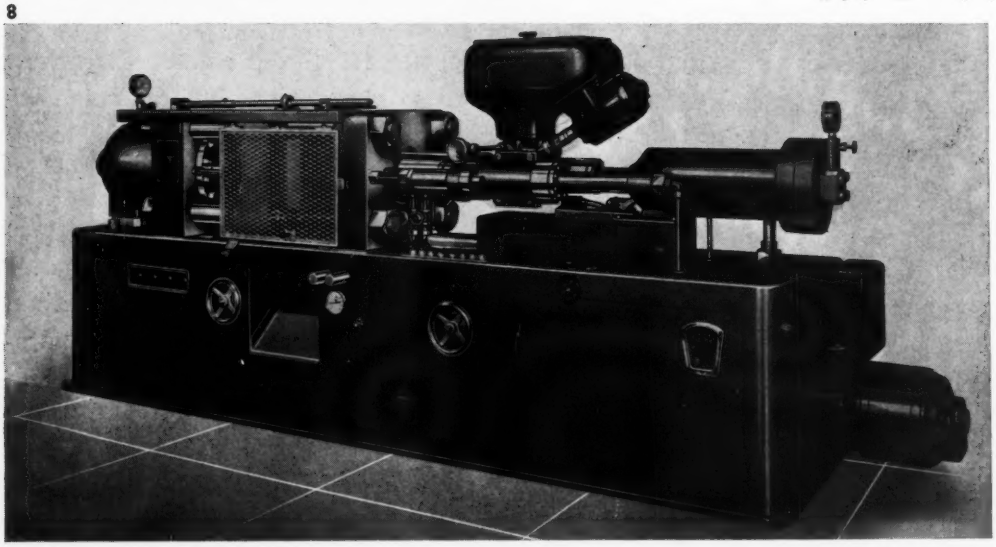
Mold Making

Molds are made from special tool steels and represent one of the highest forms of the tool maker's art. After the mold has been cut in the steel, it is usually heat hardened. To attain an extremely high finish and to minimize wear on the mold, chromium plating is frequently used. Chromium is one of the hardest known metals and, when applied by electrodeposition, provides a surface which is highly resistant to wear, abrasion and corrosion.

When multiple cavity molds are to be utilized in order to secure volume production, lower cost or higher speed of production, special economies can frequently be

6. Finishing operations play an important part in the production of plastics for packaging. Here multiple drive presses are used to accelerate drilling and reaming of molded finished parts. **7.** Sanding operations for removal of flash and final finishing. **8.** Self-contained horizontal acting injection press. Material is heated by circulating fluid heat with automatic temperature control. Courtesy Hydraulic Press Mfg. Co.

8



Sales-Winning Packages and Displays

economically styled with BAKELITE *Plastics*

With the wide variety of colorful opaque, translucent and transparent effects offered by BAKELITE Plastics, designers are afforded unlimited scope in the planning of eye-appealing containers, closures and displays.

In addition to self-contained color and rich, sparkling luster, these versatile materials provide many service characteristics to meet different requirements of fabrication and utility. There are numerous *types* of BAKELITE Plastics to choose from, in several distinct *forms* such as moldable plastics, cast resins and sheet stock.

MOLDING MATERIALS

From these are economically molded—in a single operation, both closures and containers and even entire merchandising displayers.

BAKELITE Plastic molding materials include: Acetates of exceptional high luster, toughness and resiliency; Polystyrenes with outstanding resistance to moisture and chemicals; Ureas for hard-surfaced, color-fast white, pearl and ivory colored designs; and durable Phenolics where rich, dark, opaque and transparent colors are required.

CAST RESINS

These materials, in gem-like transparent, translucent and opaque colors, are supplied in sheets, tubes, rods and partially shaped forms. They can be machined into finished products with standard tools. They offer distinct possibilities for container and display construction and for color "accents" on existing packages, such as knobs, grips and fitments.

PLASTIC SHEET STOCKS

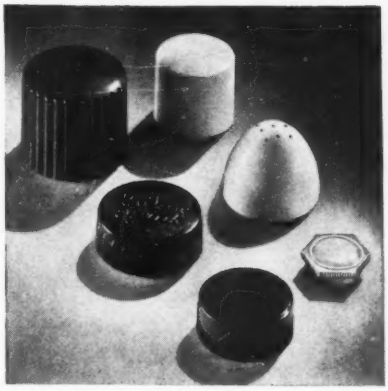
Sheet stocks, based on BAKELITE Laminating Varnishes, are supplied by fabricators in many translucent and opaque varieties—in a wide range of enduring colors. They may be drilled, punched, machined, engraved or curved and can be printed, painted, silk-screened or sand-blasted. Light in weight yet tough and highly resistant to wear, they are readily adaptable to all sizes and forms of displays.

There are also crystal-clear "Vinylite" plastic sheets that may be either drawn into sturdy, semi-rigid containers or used—in the thinner sheets—as flexible wrapping. These materials are inert to chemicals and moisture.

For detailed information on Plastic packaging materials write for illustrated Portfolio T.

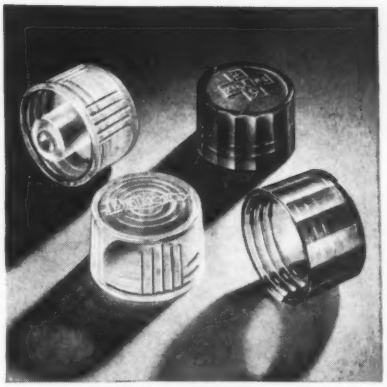
BAKELITE CORPORATION
Unit of Union Carbide and Carbon Corporation
UCC
30 EAST 42nd STREET, NEW YORK

BAKELITE
The words "Bakelite" and "Vinylite" are registered trade marks of the Union Carbide and Carbon Corporation
PLASTICS HEADQUARTERS



BAKELITE Phenolic & Urea Closures

These are obtainable in either standard or special designs. Unimpaired by constant handling or the contents of the package, they provide permanently tight seals that are easy to remove and replace.

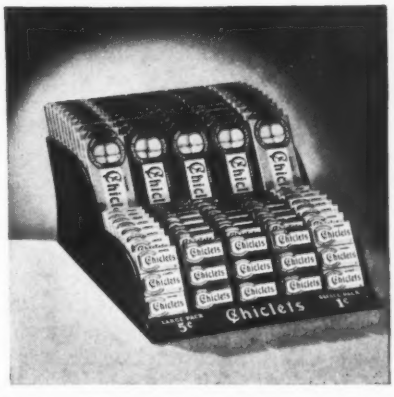


BAKELITE Polystyrene Closures

Available in a wide variety of brilliant transparent and translucent colors, these "custom-made" closures are especially resistant to moisture and chemicals. Because of this they are effectively replacing glass stoppers on acid bottles.

Molded BAKELITE Plastic Containers

Because these containers vary in appeal and function, and require different combinations of service characteristics, each is molded from a distinctly different BAKELITE Plastic . . . Acetate, Polystyrene, Urea and Phenolic.

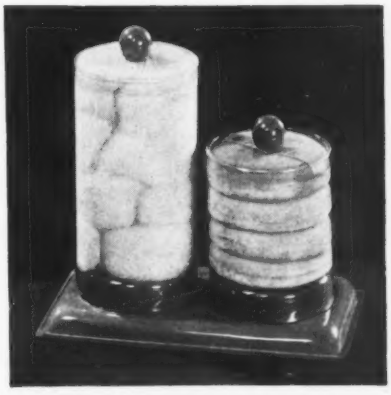


Molded BAKELITE Plastic Displayers

Permanently attractive merchandise displayers such as this are more economical to produce in large quantities when molded from BAKELITE Plastics. Light weight permits appreciable savings in shipping expense.

Laminated BAKELITE Plastic Displays

Eye-appealing counter and window displays are easily fabricated from BAKELITE Plastic Sheet Stock with standard tools and then cemented to plywood forms. Unmarred by constant handling, they outlive displays made of other materials.



"Vinylite" Plastic Sheet Packages

Deep-drawn from a transparent "Vinylite" plastic sheet material, these close-fitting covers allow merchandise to be seen, yet provide protection against dirt and moisture. Although light in weight, they are exceptionally durable.

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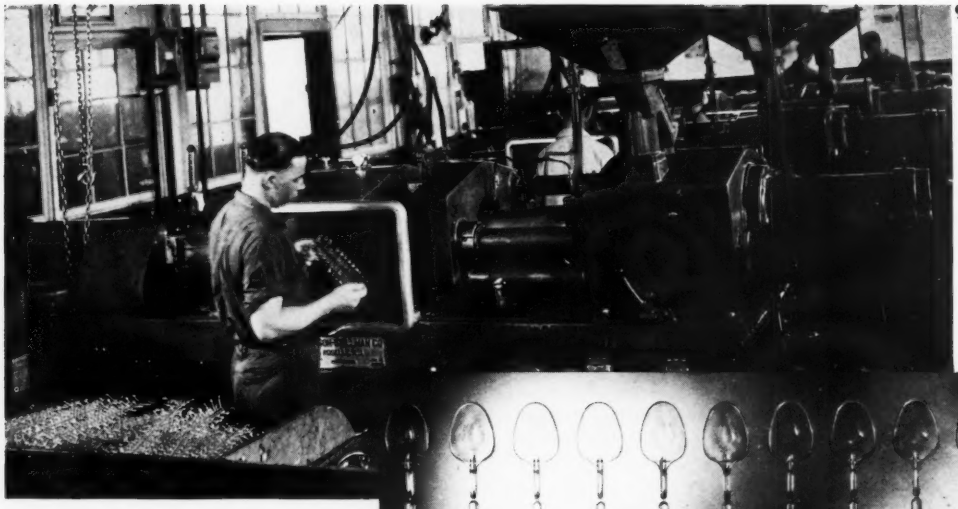

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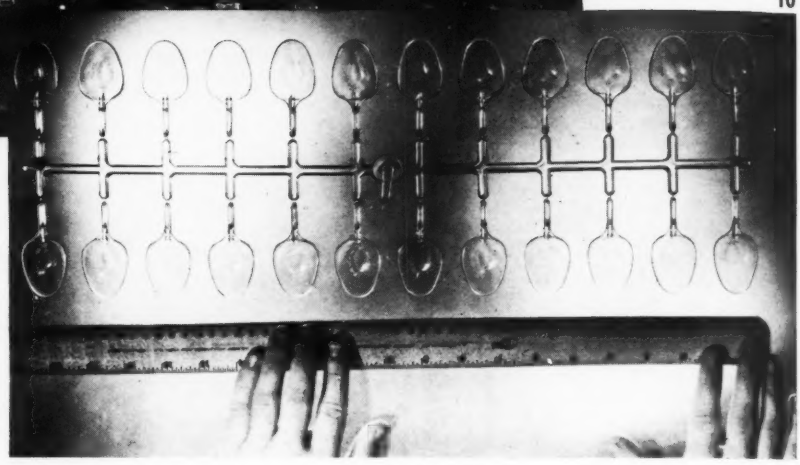

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9. A line of injection molding presses doing custom molding. **10.** A casting as taken from the presses above. Note how a multiplicity of items is produced in a single cycle of the machine. These are broken from the central tree and the latter is re-worked for re-molding. Courtesy Watson-Stillman Co.

effected, since the cost of duplicating molds is substantially less than the cost of making the original one.

A process known as hobbing is frequently utilized. This consists of forcing a hard piece of steel of a desired shape into a softer piece of mold steel under tremendous pressure and thus causing the mold steel piece to acquire a cavity exactly complimentary to the shape of the hard hob. The soft steel piece is then further finished and heat treated to attain the hardness required for use in plastic molding.

Duplicating machines, both manual and automatic, are utilized in making multi-cavity molds. These machines are essentially high-speed vertical millers so equipped that they may be guided over a template and exactly duplicated in this template in the mold steel. It may be seen that each repetition of this process will result in the preparation of an additional duplication of the mold..

A number of other methods of making molds have been developed, including the electrodeposition and the forming of molds by spraying metal.

Injection Molding

Injection molding machines were first used in the United States as late as 1934. Since then, the art has expanded very rapidly and many hundreds of these machines are in use among molders today. Injection molding is used for thermoplastic materials—i.e., materials which can be softened by heat and hardened by cooling. With such materials, it becomes possible to heat the plastic in one section of the machine and then to inject it, under pressure, into the closed mold where it cools rapidly (almost instantaneously) and can be discharged as a virtually finished piece. Thus the cycle of molding can be substantially speeded up and the operation can be rendered completely automatic.

In injection molding, it is a general practice to mold a whole series of parts in a single operation and in a single multiple cavity mold. The parts come out as a unit somewhat resembling a branch or twig and are easily broken off from the stem or waste material which is then re-fused and reused.

Machines used in injection molding are highly complex, being equipped with temperature, pressure and time cycle controls which are adjustable and which are automatically operated. Machines have a capacity of from 2 to 18 oz. per stroke. The machines operate at a speed of from 10 to 90 seconds per cycle, depending upon the size and wall thickness of the article and the molding properties of the material being molded.

Injection molding has many advantages over compression molding. Most important among these are high speed of production and reduced mold costs. The latter economy arises because smaller and lighter molds with fewer cavities can be utilized to achieve the desired production in a set time. The injection molding method is

SCULPTURED Beauty

"Maidenhood" by George Grey Barnard, Brookgreen Gardens, S. C.

RECAPTURED IN PLASTICS

COMPLETE molding facilities of the most advanced type plus 21 years of experience enable us to mold plastic packages and packaging accessories of practically any color, shape and specification—either opaque, translucent or transparent.

We are well equipped to handle big production at low unit cost. We fabricate from fifteen different plastics. Our designing and engineering staff will be glad to cooperate with you in recommending the proper materials and processes for your own particular use.

Call on us to aid you in the solution of your plastic problems. A consultation involves no obligation.

HERE ARE SOME OF THE PACKAGING ITEMS WE ARE CREATING FOR LEADING MANUFACTURERS

BOXES FOR: Candy, Gloves, Handkerchiefs, Hair Pins, Jewelry, Make Up, Pins, Puffs, Shaving Sticks, Watches.

CASES FOR: Cameras, Clocks, Compacts, Electrical Apparatus, Instruments, Jewelry, Novelties, Pens & Pencils, Razors, Syringes, Thermometers, Vanity.

CLOSURES FOR: Bottles, Boxes, Cans, Jars, Tubes.

DISPLAY STANDS of all sizes and specifications.

MACK MOLDING COMPANY

Wayne, New Jersey

Plant 1—Wayne, N. J. Plant 2—Waterloo, Que., Canada Plant 3—Arlington, Vt.

SALES OFFICES IN NEW YORK CITY, CHICAGO, DETROIT, INDIANAPOLIS and ST. LOUIS

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especially adopted for the fabrication of small boxes and closures when volume production of a uniform high quality is paramount. Containers of large size and articles of heavy sections are often more economically molded by compression molding.

At the present time, injection molding applies only to thermoplastic materials. Thermosetting materials have been molded by a similar process called transfer molding.

Designing Plastic Package Parts

The design of plastic molded packages and package parts is necessarily a highly technical and specialized art. Hence, in planning any molded article, the molder should play an important, even dominating role. He can frequently save thousands of dollars for the purchaser by a single word of caution at an early stage in the planning.

On the other hand, failure to consult him may produce a workable but far more expensive or less satisfactory package. In perhaps no other field of packaging is this condition quite as true as in the plastic molding branch.

Finishing and Decorating Operations

When the article has been ejected from the mold, it is not necessarily complete. A number of supplementary operations may be necessary, dependent upon design. If the product is a box, hinges and locks of various types may be required. These may be attached by screws, rivets or self-tapping screws. A very widely used type of hinge consists of a spring which locks into recesses provided for this purpose in the base and cover of the molded article. The use of this type of hinge requires preplanning, since the cover pivots upon a groove in the molded base. The spring's function is principally to hold the cover into this groove and to control opening and closing. Proper planning of the groove and hinge construction can predetermine the angle of greatest opening—an important factor where the molded box is to be utilized on display.

A number of methods of decorating and identifying plastics—with trade marks, lettering, etc.—have been developed. Roll leaf stamping is widely utilized. Metal inserts of various types are likewise frequently utilized as decoration. Color wipe-ins with recessed lettering or bas relief work require hand operations, but are not inherently expensive and are very frequently used on both packages and molded displays.

The use of such applied decoration has contributed not only to the versatility of plastics as a medium for packaging and for achieving sales appeal, utility and beauty. It likewise provides, on occasion, a means of reducing package costs, since such applied decorations are usually less expensive on short runs than decorations formed by the mold itself, since these require expensive mold finishing operations. On longer runs, the cost factor is, of course, not so great and the choice as between applied or integral decoration is more a matter of design rather than one of expense.

Stock Mold Plastic Containers

There are probably many manufacturers who would like to package their products in plastic boxes if they knew such boxes could be obtained within the limits of their appropriation for containers. It has probably never occurred to some of them that many such boxes are available if they were only able to dig out the source of supply. It is to these manufacturers that this article will be of special interest.

Original mold costs have been frequent barriers to manufacturers whose requirements for a few hundred boxes of exceptional quality to package a certain item would not permit the additional investment and still leave anything like profit. Molded boxes from stock designs are the natural answer to these requirements and there are many molding establishments with a number of such molds in their archives waiting to be used.

It is keen buying judgment to take advantage of these stock designs and there is no reason to believe that because a box has at one time been used to package a product that it is not equally useful in packaging another product. Even though a stock design is chosen to avoid mold costs, there is nothing to prevent the molding from being given its own individuality and made suitable for the exact purpose in mind. It must be remembered that the molds are really the stock items. The containers to be made from these molds are not in any sense ready-made. They can be as different from the original boxes for which the molds were made as the imagination of the manufacturer will allow.

In the first place, plastics permit a wide range of colors and color combinations which are in no way limited by stock molds. If an original box and cover were produced in red or black, there are literally hundreds of color combinations that can be used to make the new boxes appear as different as though actually designed for the current user. It is also possible to make boxes of one color and

Cross References: Plastics for Packaging, page 318; Thermoplastic Materials, page 320; Thermosetting Plastic Materials, page 322; Cast Plastic Materials, page 330; Plastic Molding Methods, page 332.

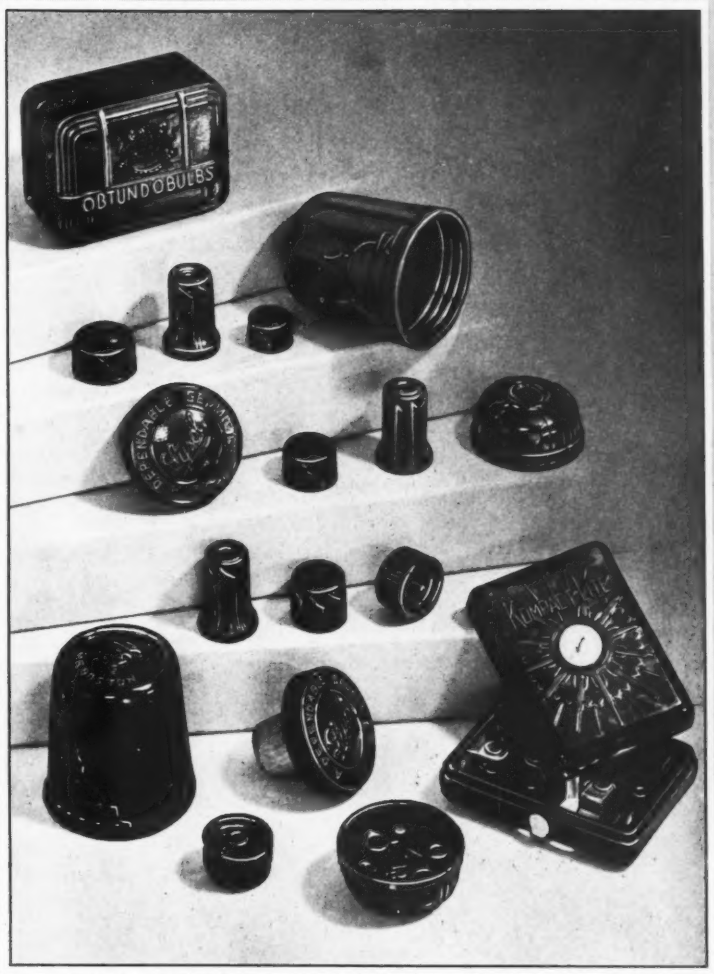
BEAUTY
STRENGTH
ECONOMY

Specify

Reilly

INDUR

Plastics



● For containers and closures that are beautiful in color and finish, exceptional in strength and economical to mold, specify REILLY INDUR PLASTICS. . . . Articles molded from INDUR combine beauty that means sales appeal with strength that insures maximum service and protection, while permitting lightness of weight in design . . . INDUR molding compounds are manufactured in several grades and degrees of plasticity, and may be had in rich blacks, beautiful mottled effects and striking color combinations.

Samples and detailed information will be gladly sent on request.

Reilly
COAL TAR PRODUCTS

REILLY TAR & CHEMICAL CORPORATION

EXECUTIVE OFFICES: MERCHANTS BANK BUILDING, INDIANAPOLIS, IND.

500 FIFTH AVENUE, NEW YORK — 2513 S. DAMEN AVENUE, CHICAGO — MINNEAPOLIS, MINN.

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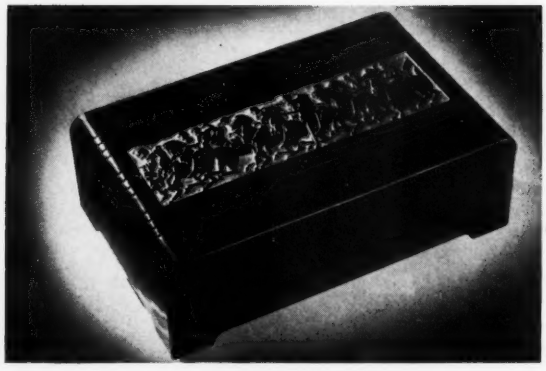

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1. Two-piece slip cover and hinged round boxes molded of urea and phenolic plastics. Photo courtesy Norton Laboratories, Inc. **2.** Plastic powder boxes and flat compacts. Photo courtesy Van Norman Molding Co. **3.** Hinged lid box with relief design on top and horizontal stripes with color filling. **4.** Bell shaped wedding ring box with delicate relief design. Photo courtesy Bakelite Corp.

covers of another. Or the cover can be made of plastics and the box itself of another material. Then, too, there are inlays, either of metal or another color of plastic material, which offer innumerable ways of changing the appearance of a box from that of its predecessor produced from the identical mold.

If a comparatively long run is contemplated, trade names and trade marks may be hobbed into the mold to be used for the cover, producing an entirely individual box with identifying name of the product or manufacturer. Inlays, especially, offer an attractive means for product identification and they may be accomplished either by inserting stamped metal inlays in the mold when molding or by hobbing the marks of identification in the original mold and then plating with metal by electro-plating methods. These recessed identification marks may also be wiped-in with contrasting color if the expense of inlays would be avoided.

A method has been worked out through which it is possible to print in as many as four colors on plastic containers with little expense. An overall pattern against a plain ground will change a stock container from a drab to a gay affair and give it individuality in keeping with the product it contains. Trade marks, advertising matter or plain designs can be imprinted in this way.

The re-use value of plastic containers must not be overlooked nor underestimated. Their smooth lustrous surface and the permanent nature of their construction preclude any chance of their being discarded as soon as the product which came in them is removed. Women, and men too, find many permanent uses for an attractive box and almost all of these plastic boxes, available from stock molds, have been carefully designed with this thought in mind. It is one of the greatest recommendations for the use of plastics in container construction. This one advantage is frequently responsible for the choice of the item at the point of sale. There are amazingly few instances where the extra cost of a plastic box has not justified the additional expense when total volume of sales has been tabulated.

Some molders have spent considerable time and money

TRIPLE "E" TURNS TO Kurz-Kasch for TRIPLE PERFORMANCE

PERFORMANCE—in manufacturing to usual or unusual specifications, on time, efficiently, effectively and economically.

PERFORMANCE—in molding with superior skill a standard design or one custom-created to the most rigid requirements.

PERFORMANCE—that is everyday run-of-the-mill routine for Kurz-Kasch . . . *performance* that is backed by years of experience in molding countless millions of intricately designed plastic parts, by ample production facilities, by engineering and technical skill to tackle the toughest assignments.

Insure trouble-free results on YOUR next plastic problem, rely upon Kurz-Kasch performance.

For the Triple "E" Products Company, St. Louis, makers of the automatic Pencil ELECTRO-POINTER, Kurz-Kasch molds four Bakelite parts: the ultra-modern streamlined housing, the drawer front and two parts for the pencil slot.

Kurz-Kasch, Inc. DAYTON, OHIO

ONE OF THE LARGEST EXCLUSIVE MOLDING PLANTS IN AMERICA

Branch Sales Offices: New York, Chicago, Cleveland, Detroit, Los Angeles, Dallas, St. Louis, Toronto, Canada. *Export Office:* 116 Broad Street, New York, N. Y.

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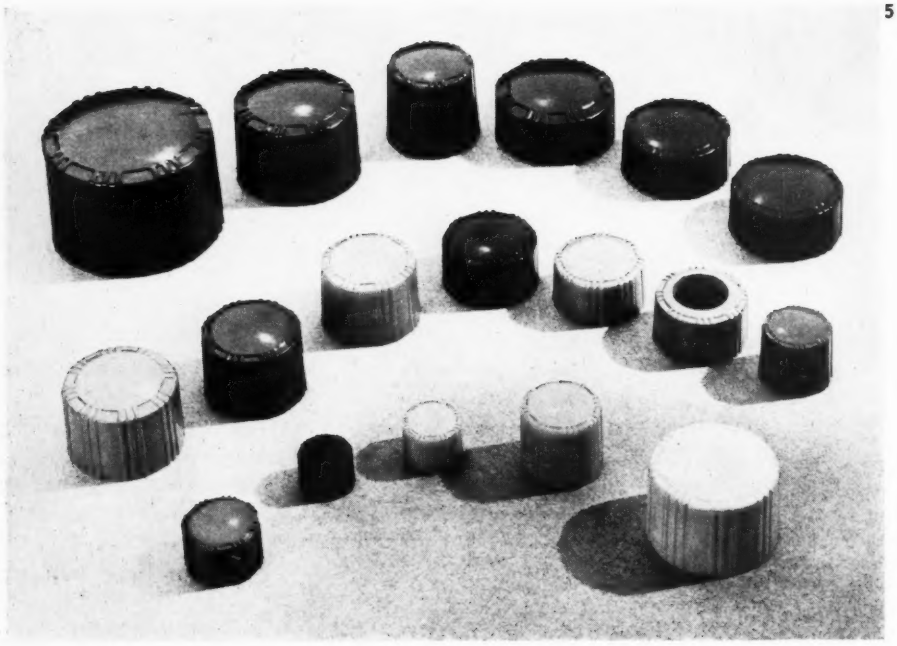


5. A group of stock mold closures available in a wide range of sizes and colors and in several types of molding materials. Photograph courtesy of the Owens-Illinois Glass Co., Closure Division.

in perfecting cream jars, powder boxes, rouge boxes, lipstick containers and allied items for the cosmetic trade. Others have developed clever moldings that serve in the re-use capacity of cigarette boxes or ash trays, and the like, cleverly designed and thoroughly useful both for packaging appropriate items of merchandise and in after use. Then there are other molded items which were originally planned for the retail trade and which, through their familiar appearance in retail stores at a rather substantial price, add obvious value to the merchandise they contain when they appear as a package.

Another advantage to the manufacturer who is in a position to choose a design from a stock mold is prompt delivery. To make a mold of steel, grinding and tooling it into shape and hobbing in special designs, takes time. Weeks, and often months, are required to finish a mold of this sort. But the manufacturer who finds a mold that is satisfactory for this purpose among stock molds has only to wait for a chance to get the mold onto a press and production begins at once. Not only that, but he has the opportunity of seeing exactly what kind of box or container will be delivered when production begins. Samples are almost always available and the manufacturer can look them over, choose one that meets his requirements of size and price, and if he chooses to do so, can order a hundred or so for test purposes in obtaining sales reaction before he orders the quantity he will eventually need. Of course, in small quantities of one hundred, these boxes will cost more than in larger quantities but, even so, the expense is often justified by the satisfaction of knowing in advance just what results can be obtained. Sample boxes or containers from a specially designed mold are often very expensive because a single cavity mold must be made and finished and this cost must be absorbed by the manufacturer before any boxes are produced. Changes and corrections are likewise expensive. But when containers are made from stock molds that have already been proved, these annoyances and additional expense are entirely avoided.

Since molds of steel are good for exceedingly long runs of production without appreciable fatigue or wear, there are many of them throughout the country that have served their original purpose and are stored away in molders' shops. Because one of them might have been designed to product boxes in which safety razors were sold is no reason why it is not equally suitable to hold another product now that the razor is no longer merchandised in that kind of box. Many of these boxes can be fitted with interior compartments at small additional cost and become entirely individual to the merchandise they now contain. Especially is this true if color combinations are changed.

Light and dark colors can be molded from the same mold. Even the cover and bottom of a box may be molded in different colors with the same operation, although this requires some ingenuity on the part of the molder and is not usually done. Lighter colors add somewhat to the cost of the box—black, dark brown, green, red and mottled being among the less expensive colors of molding materials. Another thing to be remembered in ordering plastic moldings from stock designs is that this places no handicap upon the buyer in choice of materials. These boxes are not ready-made. They are in no sense old stock. When a manufacturer orders boxes or other items from stock molds, he has the privilege of specifying the exact materials he wants used in molding his boxes. This is particularly important in ordering boxes to be used for creams, powders and other cosmetics, and the advice of your molder in the choice of materials should be taken seriously.

DISPLAYS

Section Eleven

Pages 345 to 376

DISPLAYS: DESIGN, DISTRIBUTION AND INSTALLATION

PAPERBOARD COUNTER DISPLAYS

LITHOGRAPHED AND PRINTED WINDOW DISPLAYS

FLOOR STANDS AND ISLAND DISPLAYS

DECORATED SHEET METAL DISPLAYS

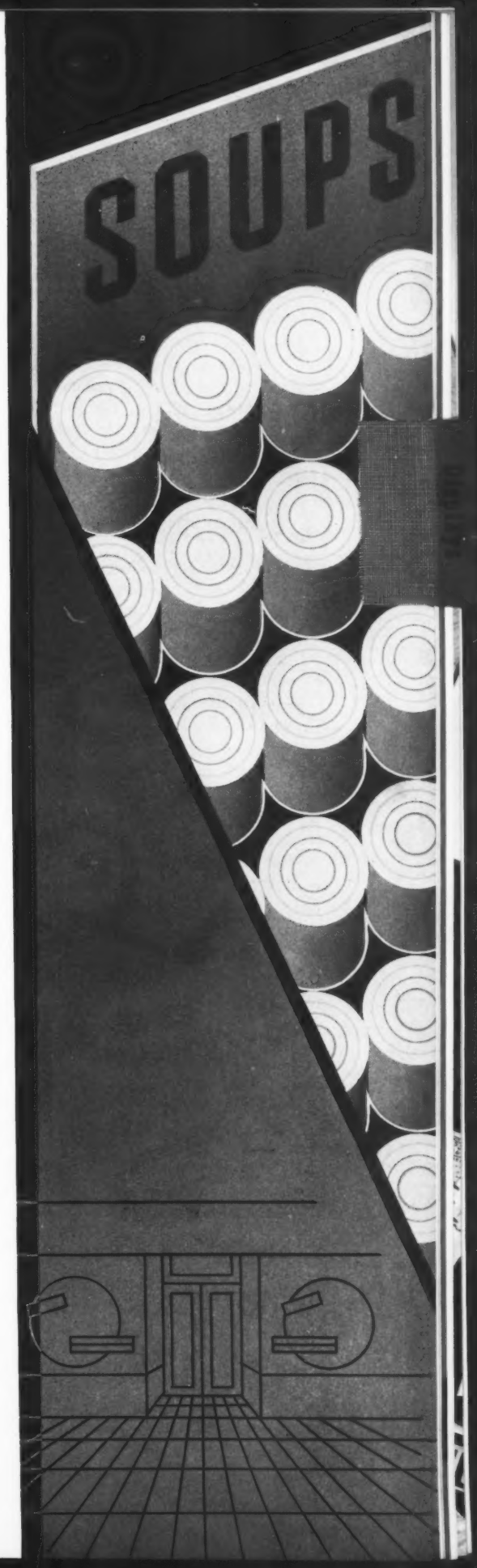
WIRE MERCHANDISE DISPLAYS

PLASTIC DISPLAYS AND FIXTURES

WOODEN DISPLAYS AND CABINETS

MOTION AND LIGHT MECHANISMS

DISPLAYS: MISCELLANEOUS TYPES



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Displays: Design, Distribution and Installation

In the subsequent articles in this section, displays are described and discussed by functional types and material types. The display user, however, is confronted with a number of general problems concerning the design, distribution and installation of displays which apply with almost equal emphasis to all displays, regardless of whether they are designed for window, floor or counter use and regardless of the material of which they may be fabricated. On this and the following pages we, therefore, undertake to analyze the general principles of display, design testing, distribution and installation.

Design Planning

Before a display can be intelligently planned, a number of essential considerations must be taken up and answered. Primary among these is the question of the type of retail outlet which the unit is designed to reach. The importance of such consideration will be readily appreciated by analyzing the difference between two extreme cases.

Manufacturers would obviously not propose to install the same type of unit in a crowded hardware store where heavy articles, greases, metal goods, etc., are handled, which might be found suitable for installation in a high-income bracket location drug store or cosmetic shop. Both the copy appeal and the construction of the display must vary in the same way in which advertisements are varied when designed to reach different groups of individuals. In the case of displays, however, the situation is a little bit more complicated than when advertisements are placed in publications. This is true because the manufacturer may buy advertising space in any publication he selects, whereas he must "earn" display space by earning the good-will of the dealer. For this reason, it is important that not only the consumer who will see the display be considered, but that the prejudices, the customs and the habits of the individual dealer in each trade play an important part in governing display design.

A further major consideration in designing displays is introduced by the competitive conditions the unit will meet. In some fields, a relatively small number of manufacturers supply displays to the trade. Dealers in these fields will welcome and use virtually any display without making close comparisons between the unit and others offered by other manufacturers.

However, in the drug and grocery fields in particular, and in some other specialized cases, competitive conditions are extremely acute. Dealers have learned to select displays with a high degree of discrimination. The chart on page 347 indicates some of the reasons why

Cross References: Rigid Transparent Displays, page 150; Paperboard Counter Displays, page 349; Lithographed and Printed Window Displays, page 351; Floor Stands and Island Displays, page 356; Decorated Sheet Metal Displays, page 359; Wire Merchandise Displays, page 363; Plastic Displays and Fixtures, page 366; Wooden Displays and Cabinets, page 368; Motion and Light Mechanisms, page 371; Displays: Miscellaneous Types, page 374.

Grocers' reasons for using displays. This chart and the ones which follow are based upon a survey conducted by the Institute of Package Research in upper class, middle class, poor and mixed neighborhoods. It will be noted, from the chart below, that dealers in all classes of neighborhoods prefer displays for fast selling items, high profit items and new items in that order. Differences exist, however, in the percentage of grocers sponsoring each reason.

UPPER		MIDDLE		POOR		MIXED	
"Fast seller"	48%	"Fast seller"	41%	"Fast seller"	31%	"Fast seller"	42%
"High profit"	24%	"High profit"	24%	"High profit"	28%	"High profit"	37%
"New item"	17%	"New item"	20%	"New item"	21%	"New item"	6%
"Quality product"	1%	"Staple"	5%	"To attract new customers"	6%	"Salesmen put it in"	6%
"Popular brands"	1%	"To attract new customers"	3%	"Staple"	5%	"Staple"	6%
Other reasons	9%	Other reasons	7%	Other reasons	9%	Other reasons	3%

grocers reject displays—reasons discovered through extensive studies of the Institute of Package Research. An examination of these reasons will show that some of them are matters involving a violation of trade customs (such as the printing of the price on the display). In other cases, the reason is tied in with the sheer inability of the dealer to accord display space to units which are too large to justify themselves on the basis of the potential volume of sales they might earn for the products they advertise.

In some industries, dealers object to displays because they are not suited to certain seasons of the year or because they are not suited to local prejudices or customs. Products which might utilize appealing bathing girl figures with impunity in some sections of the country will find displays of this sort objectionable in other regions. The illustration of liquor or of women smoking may not cause the slightest objection in some sections of the country while in other sections pronounced objections may limit circulation and dealer usage. Products sold to foreign language groups must read particularly lightly to avoid illustrations or phrasing objectionable to the religious, moral or national customs.

Another major consideration affecting display design is tied up with the anticipated life of the display. The material to be utilized must obviously be selected with consideration of its possible period of usefulness. A display designed for seasonable use need not be so sturdily constructed as one designed to be used throughout the year. Certain display materials are particularly suited for long lived, so-called permanent, displays. Among these are wood, metal, glass and plastics. On the other hand, extremely sturdy constructions have been created in paperboard, corrugated board and similar materials, particularly where the display is to be located out of hand's reach.

Another major consideration involves the nature of the product to be displayed. If the package or product is to be given open display and is to form an integral portion of the display unit, color and illustration preferences must stem from a consideration of the color and illustration of the package itself. If the product is bulky or heavy, floor stands might be selected in preference to counter displays and the sturdiness of construction suited to the weight of the product would, of course, be indicated. If the product is small and easily pilfered, open display may be undesirable and an enclosed fixture may, therefore, provide the best solution.

The examples cited above are but a few of the many considerations affecting display design and are cited merely to suggest the general line of reason which must be followed. Such reasoning must, of course, be individualized in view of the special problems affecting each product for which the display may be designed.

Dealer Desires

The dealer mans the toll gate on the road which a display must travel in reaching the consumer. His desires, whether logical or not, must, therefore, always be considered. Surveys conducted among druggists by the Institute of Package Research indicate that a paramount reason for the rejection of displays is a failure to conform to size limitations imposed by the crowded conditions of many stores.

Thus among druggists, the surveys indicate that counter displays should seldom exceed 18 in. in height and should preferably be not more than 12 in. high. Twelve inches is the optimum width for counter displays with 18 in. an approximate maximum for all except the most desirable of units. Non-merchandise carrying displays should not be deeper than 6 in. or 7 in. from front to back whereas merchandise carrying displays in drug stores begin to be rejected when they exceed 12 in. in depth.

When dealers object to displays, they object violently and effectively by simply discarding the possibly expensive units. Hence, dealers' reasons for objecting should be most important considerations to any display planner. Effective distribution cannot stop at the store door, but the display must so please the dealer as to insure installation and use for the full normal life of the unit.

UPPER	MIDDLE	POOR	MIXED
"Lack of space"	"Lack of space"	"Displays too large"	"Lack of space"
"Displays too large"	"Too many displays"	"Lack of space"	"Prices should not appear on displays"
"Displays not changed often enough"	"Displays too large"	"Store too small for displays"	"Displays too large"
"Prices should not appear on display"	"Not enough displays"	"Not enough displays"	"Too much appears on displays"
"Not enough small-size displays"	"Prices should not appear on displays"	"Prices should not appear on displays"	"Displays are not colorful enough"

UPPER		MIDDLE		POOR		MIXED	
Window	80%	Window	48%	Window	75%	Window	55%
Counter	10%	Counter	38%	Counter	22%	Counter	23%
Floor	5%	Floor	12%	Floor	2%	Floor	13%
Wall	5%	Wall	2%	Wall	1%	Wall	9%

The grocer may be right or wrong in his opinions, but right or wrong, his opinion prevails. Charted above are the grocers' opinions as expressed to the Institute of Package Research regarding the most effective types of displays. It should be remembered that these are grocers' opinions and do not necessarily apply to any other retail field.

Dealers show the greatest preference in the drug field for floor stands 36 in. or less in height, although they will, in many cases, accept higher stands particularly where merchandise is not incorporated in the unit. The optimum width of floor stands is indicated by the surveys to be 24 in. or less with an optimum depth of approximately 12 in.

In a survey on the druggist's desire in respect to window display size, the majority of druggists indicated 36 in. as a maximum height, although a large number stated that they would accept displays up to 48 in. in height. The majority of druggists refuse to utilize window displays greater than 36 in. in width, although here again a substantial percentage will accept larger types. The maximum depth acceptable to the majority of druggists is 12 in.

Druggists—who may be taken as perhaps the most enlightened group in their usage and selection of displays—are extremely receptive to lighted displays. Some 84 per cent covered in the Institute's surveys utilized lighted displays and 49 per cent of these leave the unit lighted after closing hours. Sixty-five per cent of all druggists use and welcome motion displays and this figure would perhaps be found to be even higher in certain other fields, notably in the hardware industry.

Distribution and Installation

The crucial decision affecting all displays is made by the dealer at the moment when deciding whether or not to utilize the manufacturer's offering. In order to influence this decision in their favor, manufacturers have adopted numerous devices. Some displays are so constructed as to serve as carriers for the merchandise on their trip to the retailer. This is particularly true of dispensing types and certain other counter types. Such displays are almost invariably utilized because it is more difficult not to utilize them than to do so.

Elaborate displays of permanent fixture type are usually sold to the dealer either for cash or as part of a deal. Here, again, the problem of utilization is a relatively simple one, although it is important that proper instructions be given the dealer if proper utilization is to be effected.

Other manufacturers utilize display installation servicers who first sell the dealer on using the display and then perform the actual operation of installation. There remain, however, a large number of displays that are sent to dealers in the hope that a substantial portion of them will be used. Here the governing factors have been found in repeated tests to be the elements of simplicity, convenience in use and proper instruction for erection.

A surprisingly high percentage of grocers claim to use all displays offered to them, while the percentage of dealers claiming to select displays is comparatively low. While these claims must be taken with a grain of salt, it is significant that they indicate that display distribution has not reached a saturation point in the grocery field and that displays are not discarded simply for lack of space.

	UPPER	MIDDLE	POOR	MIXED
% Claiming to use all displays	100%	77%	80%	77%
% Claiming selective use	—	23%	20%	23%

Paperboard Counter Displays

Counter displays are constructed of an almost infinite variety of materials. Yet paperboard displays account for, by far, the largest portion of units used in this field. The reason is not hard to find. Paperboard displays are inexpensive and, therefore, long life need not be expected of them if they are pay their cost. Since counter purchases are frequently impulse purchases, paperboard displays can be utilized for items of virtually any type and can be counted upon to create the necessary volume of sales before wear and soilage induce their discard.

The simplest and least expensive of paperboard displays are those which are formed by the very containers which bring the merchandise to the dealer. These include the smaller corrugated containers (up to about 1 ft. by 2 ft. in base area) and folding cartons such as are used for conveying half-dozen or dozen units of merchandise to the dealer.

A great number of constructions for both types described above have been developed. The low cost of such displays is, of course, based on the dual use function.

Perhaps nearest in order, both in respect to frequency of use and lowness of cost, are the die-cut paper cut-outs and platforms used to display one or more pieces of merchandise upon the counter. These are particularly common in the drug field and here again an almost infinite variety of construction forms have been developed. Some of these are in the common domain and others are

Cross References: Color and Reproduction Methods, page 16; Folding and Display Cartons, page 35; Rigid Transparent Displays, page 150; Displays: Design, Distribution and Installation, page 346; Decorated Sheet Metal Displays, page 359; Wire Merchandise Displays, page 363; Plastic Displays and Fixtures, page 366; Wooden Displays and Cabinets, page 358; Displays: Miscellaneous Types, page 374.

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1. A corrugated shipping container which opens to form a display box used to present a premium introductory offer. Courtesy The Hinde & Dauch Paper Co. **2.** Simple display basket as used for bulbs. Courtesy The Forbes Lithograph Co. **3.** Ingenious scoring of foil faced board produces this attractive three-dimensional unit. Assembly instructions are printed on the punch-out piece which is removed to provide a hole for the product. Produced by the Reynolds Metals Co., Inc. **4.** A display card designed to introduce premiums rather than to sell the product directly. Produced by The Forbes Lithograph Co.

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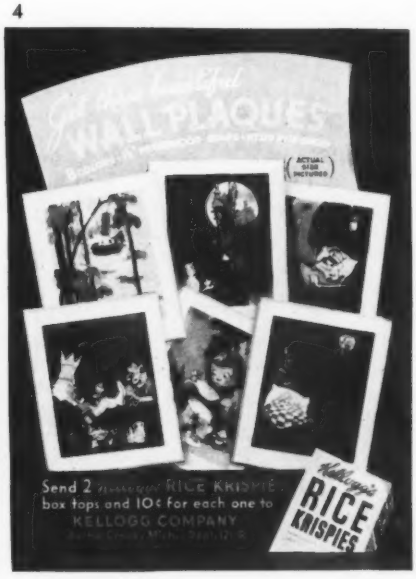

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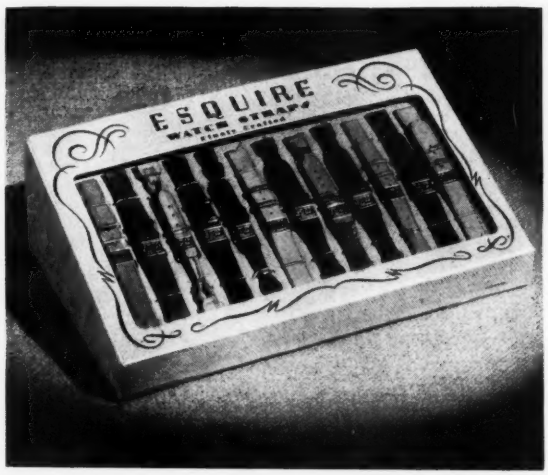

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covered by patents. But virtually every display producer, lithographer and card manufacturer is in a position to produce most types. A third common form is the jumble basket, a display well named since it consists of paperboard folded into the basket form with a back panel raised to carry the message. The merchandise is placed in jumble fashion in the basket on the well proven theory that consumers will more readily handle items that do not look as if they have been carefully arranged.

Printed cards which do not carry merchandise are sometimes used as counter displays. On occasion, they are designed so that the merchandise may be placed on the counter itself adjacent to the card. In other instances, the purpose is to present a printed booklet, a premium offer or some other data inducing consumer interest and not directly connected with the product and its package.

Set-up box constructions are used where decorative effects are desired or where a relatively long life is to be expected for the unit. In combination with transparent films, such set-up box constructions are used to provide protection for the merchandise against undue consumer handling and pilferage.

Counter displays are usually shipped to the dealer packed with the merchandise they are designed to sell. This is necessarily so when the merchandise is packed within the display as in the corrugated box and carton types. The custom covers other types as well, however, since the low cost of these units does not justify separate shipping efforts in most instances and since low unit cost makes possible the successful use of such displays even if only a portion of all those distributed are utilized.

5. A single piece of folding board forms this two-receptacle display occupying a minimum of counter space. **6.** One of the commonest of display types is the break-back carton shipper, the top of which opens to form the back display panel. Courtesy The Forbes Lithograph Co. **7.** A single sheet of lithographed board forms a three-dimensional counter platform shown here erected and in-the-flat. Courtesy The National Process Co., Inc. **8.** Set-up boxboard and fancy boxmaking papers are sometimes used for semi-permanent fixtures. The display illustrated has a removable drawer compartment and an acetate window. Photo courtesy Monsanto Chemical Co. **9.** Designed to introduce an assortment of 5-cent packages, this roadside stand is in actuality a corrugated shipping container ingeniously die-cut and decoratively printed. Courtesy the Robert Gair Co., Inc.

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1. A large die-cut window unit with scored platform base for merchandise tie-in. Photo courtesy The Forbes Lithograph Co.
2. Direct-color photography makes this die-cut display extremely realistic. Courtesy Ketterlinus Lithograph Manufacturing Co.

Lithographed and Printed Window Displays

The effectiveness of window displays, as an advertising medium and as a means of drawing people into the store, has been demonstrated in repeated practical tests and by numerous surveys. The problem of the display advertiser is, therefore, principally one of devising displays sufficiently attractive to the retailer to induce him to accord them window space. If the display can pass this test, it must then prove sufficiently attractive to the consumer to create sales and goodwill.

Thus it will be seen that, of necessity, pleasing the dealer becomes the primary function of any window display advertiser. Surveys of dealer desires, conducted by Modern Packaging's Institute of Package Research and other surveys, indicate that certain basic elements lead to dealer interest and dealer adoption of displays. These elements include:

Promotion of dealer interest through the advertisement of related products not necessarily manufactured by the sponsoring company.

Promotion of consumer good opinion of the dealer.

Promotion of seasonal items at the proper time of the year.

Promotional reminders of forgotten needs.

Premium offers requiring immediate entry into the store either to make a purchase or to secure further information, coupons, etc.

Among the things that dealers do not like in window displays are:

Oversize displays demanding more space than the product's potential sale would justify.

Difficulty in erecting displays unless serviced by an installation company.

Copy themes making invidious comparisons with other merchandise sold by the dealer.

Window display design and structure cover an extremely wide range of variation. Advertisers have called upon virtually every reproductive process from silk-screening for short run displays to multi-color lithography with direct-color photographic effects.

Structures vary from simple rectangular cards equipped with folding easels of solid fibreboard to complex three-dimensional effects. Motion is utilized in about 5 per cent of the total number of displays produced and light is utilized perhaps in as large a proportion as 15 per cent.

Flexibility of display construction and design has been

Cross References: Color and Reproduction Methods, page 16; Displays: Design, Distribution and Installation, page 346; Paperboard Counter Displays, page 349; Floor Stands and Island Displays, page 356; Decorated Sheet Metal Displays, page 359; Displays: Miscellaneous Types, page 374.

THE HONORABLE PIANO

...VERY AMERICAN...AND ALSO CHEAP

FIFTY YEARS ago, the Japanese admired extravagantly and tried to emulate everything American. Among the Samurai, or the Social Register families, the United States was the smart thing. Every upper class male with yen enough took ship for San Francisco.

Now while Osaki Shindig, a nabob of Yamahama, was making his all-American, he sent home a large square piano. By letter he instructed his servants to uncrate piano, put on legs, otherwise let severely alone.

The first American piano in Yamahama was a social sensation. The local gentry came out in gangs to gurgle tea, and gape at the mahogany monstrosity from a safe distance.

But Hasitu, cabinet maker of Yamahama, was far from pleased. Hasitu suspected that such foreign imports might hurt the home trade.

By the discreet passage of some folding money to the Shindig servants, Hasitu and two assistants got into the house for a close-up of the piano one day when the family was away. Quickly, without leaving a telltale finger print, they took down the exact dimensions of the piano, and made working sketches.

Three weeks later, Hasitu put on his best bathrobe and Sunday sash, and invited all his charge account customers in good standing to see his version of the Honorable Piano, very American, and also cheap.

Unfortunately, Hasitu hadn't the foggiest notion of a piano's real function. When one of his imitation ivory imitation keys was pressed nothing happened. Outwardly it was a grand piano, but the guts were missing. When Hasitu discovered his grave error, he correctly committed hari-kari . . . The Japanese have many admirable traits.

MANY A buyer of store display does not distinguish between a cabinet and a piano, mistakes a Hasitu for a Mason & Hamlin. For while most store display is lithographed, most lithographic jobs are not store display. A good lithographer can be a poor display producer.

We happen to be lithographers, but our product is store display. We leave the 24-sheet posters, the packages, labels, letterheads, box wraps and colored catalogs to others, claim no particular proficiency in those fields.

We are good lithographers—with a large plant, an exceptionally competent staff, fine equipment. Some of our presses are unique and exclusive in the industry. We pioneered in the etched dot, and direct color process. We know and practice all the best techniques.

But for thirty years, all our abilities and facilities have been devoted principally to store display. Our job starts with the *function* of the display, ends with the window. We begin with an *idea* rather than an illustration.

We believe that any store display—counter, floor, or window—must *stop* the prospect, *show* the product, *sell* the story; and recall and re-sell the

advertising. Good display helps the consumer, retailer, and display buyer.

Window dimensions, store traffic, service counter demands; mixed express shipments, and the cubic capacity of salesmen's automobile trunks; the I. Q. of retail clerks who unpack and assemble displays; Southern sun, coastwise humidity, steam heat, the life of ink and the structural stresses of cardboard; the sampling campaign, the introductory offer, the special deal, the price promotion; the standing, walking or riding prospects; the visual competitions, advertising associations, trade practices—all enter into our planning.

We spend a lot of time and study in main street and back alley stores, follow through on our jobs, have collected hundreds of case histories. And our angle is that a display is something to sell *for* you, rather than sell *to* you.

The foregoing may sound pretty cocky, but our customers will confirm our claims.

Remember just two things:

ALL DISPLAY is expensive. The average display piece costs a dollar to produce. Shipping costs money. Salesmen's time selling the display costs money. Windows sometimes must be paid for in cash or goods. Window and floor space cost the retailer rent. But the most expensive display, no matter how much your purchasing department saved on the printing job, is the one that *doesn't do anything!*

And your store display represents your products and your firm—to the prospect *closest to buying*. Look at your current displays closely, and see the kind of ultimate representation you get! So long as you spend for displays, why not get the most for your expenditures?

EINSON-FREEMAN CO., INC.

DISPLAYS THAT SELL

GENERAL OFFICES AND PLANT • LONG ISLAND CITY, N. Y.

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shown to be an important factor in inducing dealer acceptance. For this reason, manufacturers frequently provide not merely a central display, but accessory units of smaller size which may be used in conjunction with the main display to form a complete window. The accessory units may be discarded entirely by the dealer where space does not permit their use. They may, on the other hand, be used and re-used as wall signs, counter displays and for other purposes.

Distribution methods vary widely, dependent, in part, upon the policy of the distributing company and, in part, upon the nature of the display structure. Some companies offer dealers complete display programs, including from four to 24 window set-ups per year. Dealers literally "subscribe" to these programs. Most companies, however, do not find this method practicable for their problems and resort to methods involving a greater proportion of waste in circulation. Some firms ship smaller

3. A display which ties in with outdoor advertising by reproducing the current outdoor poster. Note product picture repeated in the consumer's carry-bag. Courtesy Niagara Lithograph Co. **4.** Designed for dealers carrying either of two brands, this full-color lithographed display card reaches the dealer with two giant reproductions of packages. Courtesy Einson-Freeman Co., Inc. **5-6.** Two displays in one are formed by mounting lithographed sheets to both sides of a board and providing a hinged turn-over easel. Courtesy Kindred, MacLean & Co. **7.** Typical of the modern use of direct-color photography is this die-cut window display. Courtesy Einson-Freeman Co., Inc. **8.** Printed on transparent acetate sheeting, this unit is designed to be mounted directly to display window glass and to suggest to the consumer that the package has actually broken through the plate glass. Courtesy The Forbes Lithograph Co. **9.** A three-dimensional unit, added depth being obtained by curving the reproductions of the miniature figures in the orchestra. Courtesy Stemar Displays Co. **10.** A simple but classic window display card giving a three-dimensional effect by means of a small foil scroll. Courtesy Kindred, MacLean & Co.

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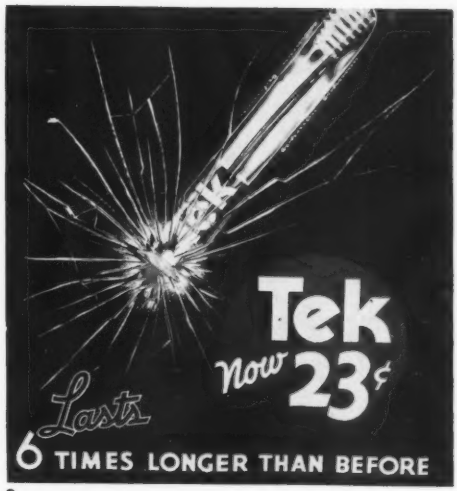

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displays in merchandise containers. Others use the services of professional display installation organizations. Still others use their own sales force as a display installing organization. This method is particularly effective in minimizing display waste if the salesmen are properly trained. Some firms contact the retailer by direct mail, furnishing return postcards for reply. Only those dealers returning the cards are serviced.

A most important factor in achieving display usage is the provision of instructions for setting up the display. These are frequently printed upon a portion of the display itself or upon the container in which the display is shipped. The ideal display would require no instructions whatsoever. But until the ideal dealer can be invented, manufacturers may do well to play safe and to provide simple, readable instructions illustrated by diagrams wherever there is the slightest possibility of displays being discarded because dealers do not understand how to set them up.

While it is essential that the dealer be sufficiently interested by the display to insure the utilization of a large percentage of the units issued by the sponsor, the efforts to so interest the dealer must never involve a sacrifice of consumer appeal. In the final analysis, dealers prefer displays which influence the consumer to buy their merchandise. The effectiveness of copy and illustration upon the consumer must therefore be the paramount consideration and all other rules may sometimes have to be violated in achieving this effectiveness.

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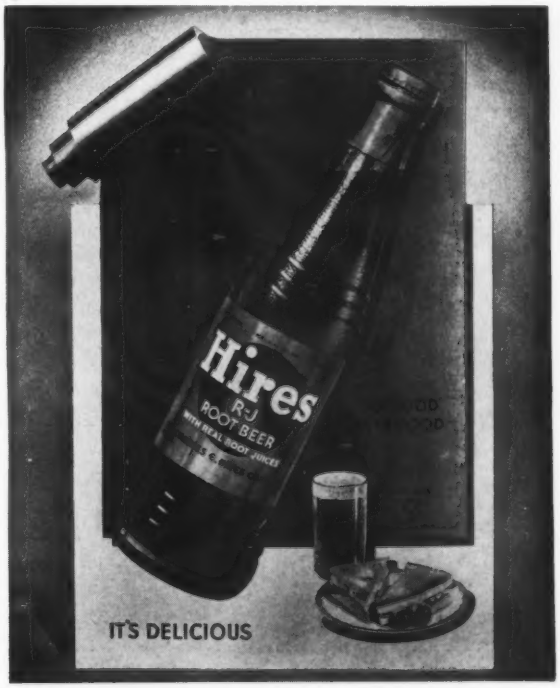

HAVE YOU FORGOTTEN HOW Refreshing BEER CAN BE?
TROMMER'S THE Malt BEER
DRY··· LIGHT··· Refreshing!
BREWED SOLELY OF MALT AND HOPS
America's Largest-Selling Malt Beer

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1. Printed corrugated board forms this combination step platform and jumble basket display. Photo courtesy Robert Gair Co., Inc. **2.** Slanting side walls edge three platform steps on this counter unit. Rear display sign may be removed for window use. **3.** Waist-high platform of corrugated board printed to simulate a stacking of shipping containers. Photos courtesy The Ottawa River Paper Co.

Floor Stands and Island Displays

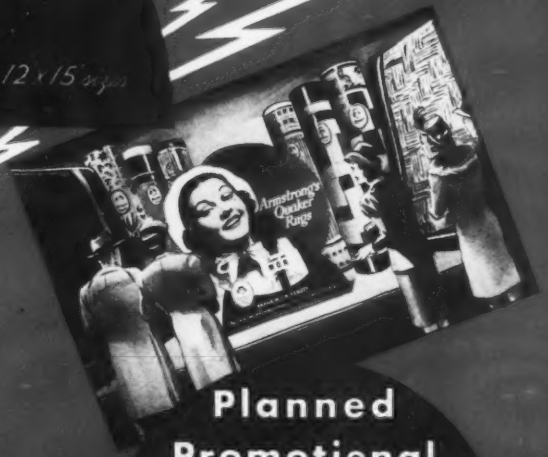
Floor stands have achieved popularity largely as a result of the changes in retail merchandise which have occurred within the past decade. Dealers, and particularly operators of self-service stores, have found it desirable to utilize platforms, bins and other floor resting displays for mass display of fast selling items of merchandise. Even in smaller stores and those featuring salesclerk service, floor stands have proved an effective medium largely because of the congestion of displays competing for counter and window position and because only a floor stand offers a large area of display and copy space inside the store.

There are two basic types of floor stand. One is made from corrugated fibreboard or solid fibreboard and is designed to hold a substantial volume of merchandise. Those made from solid fibre are usually lined with a multiple colored lithographed sheet. Those made of corrugated board are printed in two or three colors with rubber plates. Usually the newly developed glossy inks are utilized and extremely effective printing effects can be achieved. The use of rubber plates and direct printing on the combined board, as well as the low cost of the board itself, all serve to make possible the production of these displays at relatively low cost.

For higher priced lines of goods and where greater detail of reproduction is desired, lithographed floor stands are utilized. Here the paper sheet is lithographed as it would be for a window display or a counter unit. It is then mounted to heavy solid fibre die-cut in the shape necessary for the formation of the stand. One form of lithographed stand, which has achieved wide usage, is the full size or more than full size reproduction of a human figure—usually a pretty girl—presenting the product to the consumer. Such displays have a startling realism and seem to draw the eye from the farthest por-

Cross References: Color and Reproduction Methods, page 16; Displays: Design, Distribution and Installation, page 346; Paper board Counter Displays, page 349; Lithographed and Printed Window Displays, page 351; Decorated Sheet Metal Displays, page 359; Wire Merchandise Displays, page 363; Displays: Miscellaneous Types, page 374.

A DIRECT HOOK-UP *to* SALES



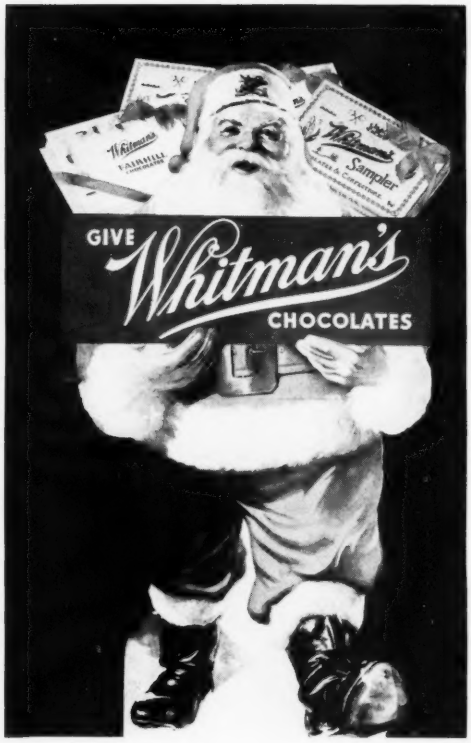
A well-planned display at Point-of-Sale is the essential link between your other advertising and *direct sales*.

We create hundreds of displays that are successful in doing a specific selling job. This Armstrong display is a notable example.

Planned Promotional Advertising

KINDRED, MAC LEAN & CO., Inc.

43-01 TWENTY SECOND ST.
LONG ISLAND CITY, N. Y.
Phone: STillwell 4-7212



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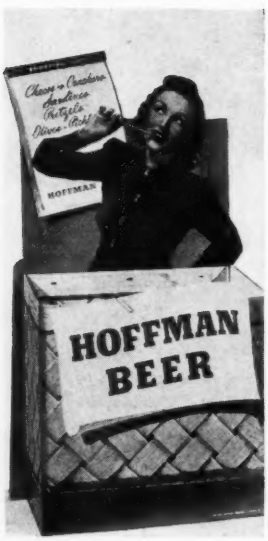
4. Typical of the vogue for life-size figures in floor stands is this Santa Claus equipped with back-of-shoulder basket for merchandise. Photo courtesy The U. S. Printing & Lithograph Co. **5.** Knee-high platforms of colored and printed corrugated board used in super markets for stacking merchandise. Courtesy Robert Gair Co., Inc. **6.** Tire accessory display formed of concentric hexagonal corrugated rings providing three display levels and multiple sign surfaces. Courtesy The Ottawa River Paper Co. **7.** Lithographed jumble basket for floor display of beer cans designed for use near the store door where reminder shopping list on rear panel can work effectively. Courtesy Einson-Freeman Co., Inc.



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tions of the store. Another lithographed form is the jumble bin. Here the side walls bear lithographed messages and the top of the unit is recessed to provide a basket or bin for merchandise. Numerous variations of this structure are, of course, possible.

Lithographed floor stands are, of course, more expensive than the corrugated type. The selection of the type to be used must depend, in large measure, upon the kind of illustration it is desired to place on the stand and upon the appropriation available.

One borderline type of floor stand, which has achieved very wide usage, is the convertible shipping container. A number of variants of this type are available, but all have in common the basic fact of prior use as a shipper. Some one or more of the flaps of the shipping container is so designed as to open up into a display panel. This type of display has been most widely used in the grocery field for canned goods, bottled goods, packaged flour, etc. It is, however, also used in a number of other industries and the dual use of the shipping container makes possible extremely low per case display cost.

Much experimentation has been done in devising ingenious constructions for floor stands. In fact, some of these have perhaps suffered from over ingeniousness and over complications. The basic aim in constructing any floor stand must be to achieve the desired decorative effect while using as small an expenditure of materials as possible and while obtaining a maximum of structural strength, floor life and serviceability. In attaining these aims, designs which are self-supporting and require little or no interior structure are naturally to be preferred over more complex types. This is particularly true if the dealer is to be expected to set up the stand. Where detail men or display installation services are used, a certain degree of complexity will not reduce the number of installations achieved. But wherever dealer action is required to convert the shipped stand into a used one, simplicity becomes a paramount consideration.

Another trend making itself increasingly notable in floor stand construction is that involving the re-use of some portion of the stand. Some stands are made reversible with front panels devoted to one product and back panels to another produced by the same company.

Decorated Sheet Metal Displays

A decade or two ago, the standard practice followed by most manufacturers to get their goods in the hands of dealers was by regular or "high pressure" methods. They would then be content to sit back and rely on the initiative of the retailer and his clerks to sell the goods. Having completed the physical distribution of his goods, the manufacturer felt that he had adequately performed his part of the complete selling job.

In recent years, merchandising problems have become infinitely more complex. Today, there are thousands of items competing in the same field where formerly there were only a few. It is said that the average retail druggist carries in stock anywhere from ten to twenty thousand different items and almost as many are carried by other types of retail outlets. Increasing discrimination among consumers has forced dealers to increase the varieties of products carried in stock to the point where, obviously, they cannot all receive equal promotion.

Such competitive conditions have altered the viewpoint of the manufacturer. Getting his goods into the store is only the beginning, for success and profits today are measured in terms of getting those goods into the hands of the ultimate consumers. Selling the consumer is not the responsibility of the dealer alone; it is one which must be shared in by the manufacturer as well. With thousands of items competing for the dealer's attention, with varying margins of profit to switch his loyalty, the self-interests of the manufacturer dictate that he shall lend a definite helping hand in the retail store. Only by so doing can he make certain that his products receive the attention which they must be given to be profitable.

It is at this point, and to perform this job of information and persuasion, that the store display serves so usefully and effectively. Properly designed, the display brings the product within the range of the consumer's vision, explains and demonstrates what it will do and why it deserves consideration.

Of the many types of materials used in the manufacture of merchandising displays and similar products, sheet metal stock is one of the most popular. Cheapness, strength combined with little weight, pleasing appear-

Acknowledgment is made to S. R. Wirth of the Advertising Metal Display Co. for generous aid in the preparation of this article.

Cross References: Displays: Design, Distribution and Installation, page 346; Paperboard Counter Displays, page 349; Floor Stands and Island Displays, page 356; Wire Merchandise Displays, page 363; Plastic Displays and Fixtures, page 366; Wooden Displays and Cabinets, page 368; Displays: Miscellaneous Types, page 374.

1. Dispensing display equipped with thermometer and humidity guide to draw consumer attention and re-filled through a withdrawable rear compartment. **2.** Drug fountain back bar display equipped with electrical outlets for soup heating cups and holding 5 doz. 7½ oz. tins on a 27 in. by 8 in. counter area. Courtesy Advertising Metal Display Co.

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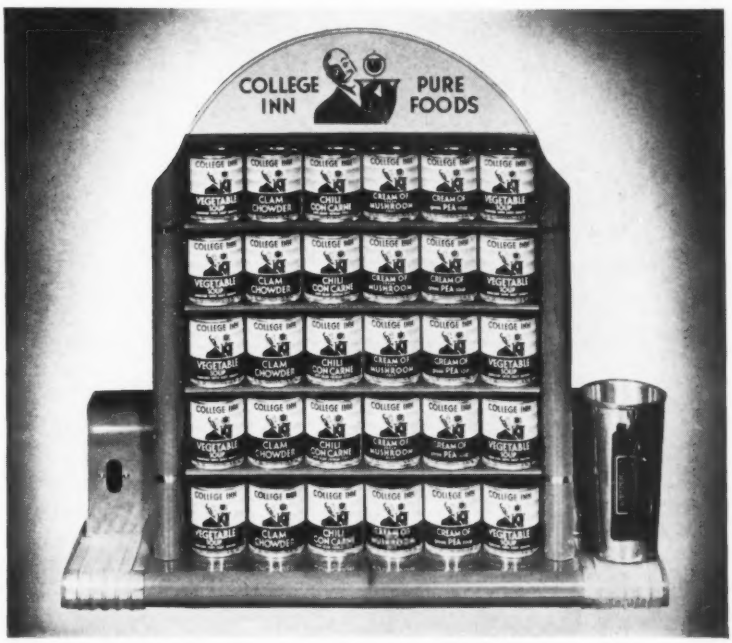
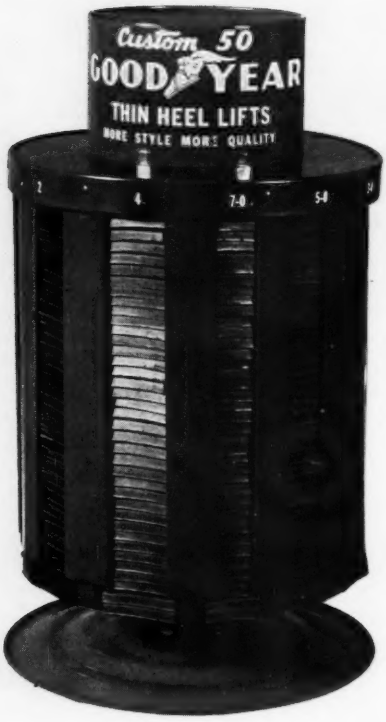
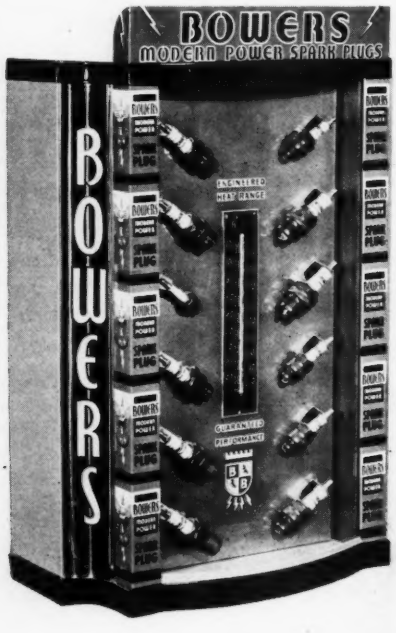
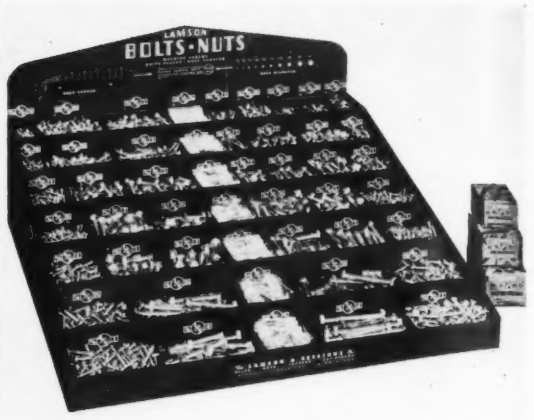




3. Revolving stand pivoted on pressed metal base provides for immediate selection of any desired size of assorted merchandise. Photo courtesy Advertising Metal Display Co.



4. Bent glass front panel displays spark plugs to good advantage. Thermometer ties in with copy and attracts consumer attention. Photo courtesy Advertising Metal Display Co.



5. Multi-compartment counter display fabricated of sheet metal. Rear panel has gauges for the measuring of bolt sizes. Each bin identified by small labeled-on sign. Courtesy Feick Manufacturing Co.

ance, durability and ease of fabrication are some of its qualities, while one of the most important is the ease and economy in coating and decorating by lithography. Displays made from tin plate or similar sheet metal stock are economical to build, need little bracing as they have sufficient strength and rigidity unto themselves and in large quantities are not only inexpensive, but may be used over long periods.

While those basic essentials for a good store display—correctness of size, focusing of attention on the product, self-service, storage features and simplicity of design—hold true, regardless of what material is used in the construction of the display, those made of metal offer these additional features:

1. Many types of displays are designed with the complete expectancy that they will be used for only a brief period and then discarded. Metal displays on the other hand offer strength, rigidity and a permanency of finish, unaffected by time, which encourages their use over much longer periods.

2. Inasmuch as the dealer uses metal store and display fixtures as part of his permanent equipment, he recognizes their superior qualities. In the displays that are sent to him by manufacturers, he feels that those made of metal fit in with the other fixtures he has, make for an improved appearance in his store interior and may be used with entire freedom from worry as to tipping over and damaging goods.

3. Metal combined with other materials offers an unlimited range of possibilities for new and different display ideas. Many times it is advisable to provide a storage cabinet with the display and this can be better built of metal.

4. Combining the beautiful reproductions, obtainable by modern lithography, with the use of newly created or currently popular materials, such as chrome and other plate finishes, makes it possible to obtain results commensurate with the most attractive modern surroundings.

In considering the construction of metal displays, it is well to understand that there are basic differences be-

GRAND -CITY

designs and produces CORRUGATED SHIPPING CASES, DISPLAYS and SPECIALTIES for all industries—and with such flexibility that we often serve both the largest and smallest units within an industry!

The illustrated FADA RADIO DISPLAY has been a sensational success with dealers everywhere. It is a typical GRAND-CITY product—the result of twenty-five years of research, wide experience and specialization.

It is no accident that this and other GRAND-CITY products are so widely preferred. We have built soundly and well for more than a quarter of a century. Our production facilities are extensive and adaptable—ready to serve all needs with economy and dispatch. Specify GRAND-CITY and you specify *satisfaction*—

. . . in SERVICE

. . . in PRODUCT

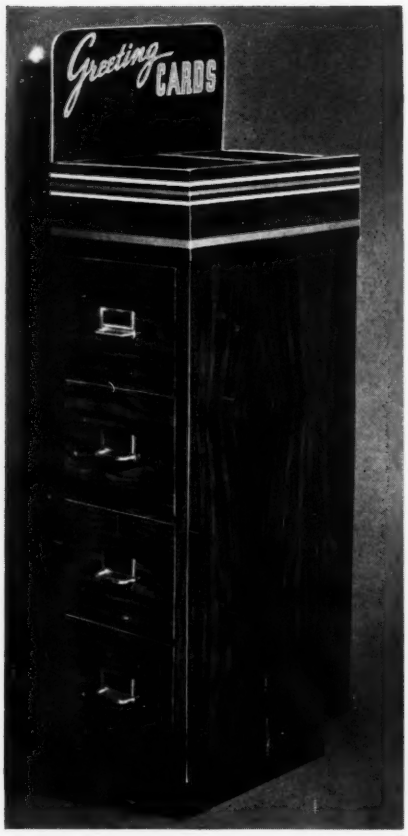
GRAND-CITY CONTAINER CORPORATION

622 West 57th Street New York City

FACTORIES IN NEW YORK CITY, BROOKLYN, N. Y., AND ALBANY

"If it is made of corrugated paper—we make it."

XUM



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6. Combination file cabinet and display stand. The top is removable. **7.** Metal frame provides three shelves and display panel on limited floor space. **8.** This unit solves the problem of displaying bulky merchandise requiring demonstration. Note casters on stand. Photos courtesy Advertising Metal Display Co.

tween this type of manufacture and that of other metal products. It is by far a more specialized and less mechanical business. Each particular display is a distinct production job requiring the working out of special designs and the planning of production operations.

Combining other popular materials, such as chrome, gold bond and plated finishes, with lithographed or silk screen processed reproductions often enhances the attractiveness of a metal display piece, making it acceptable under the most critical circumstances. Other materials utilized extensively are glass, mirrors, wood, rubber, castings, plastics, fabrics and electrical equipment.

The various types of displays may range from step-up or pyramided to round or rectangular and may have incorporated in them self-serving, dispensing or dealer-help features. The latter may consist of gum tape holders, string cutters, coin and stamp trays or even compartments to hold other merchandise. Displays may be made rotating or stationary. A popular style of display is the overhead arch which not only attracts attention, but suggests a department in itself. In planning a display, the relative flimsiness of light gauge metal may be overcome by such means as rolling or beading the edges, embossing or depressing surfaces or rounding the corners.

By far the largest number of metal displays produced have lithographed copy. There are several processes, however, by which metal may be decorated.

Press Printing and Gum Printing: These processes are similar and are done on the flat sheet after the base coating of the metal has been applied. The printing is done directly to the base coating. Both processes of decorating are used extensively in the manufacture of metal signs where fineness of detail is not so essential.

Silk Screen Stencil: The base coating is applied in the same manner as in the preceding processes, while the design is applied by forcing stencil paste through a silk screen. Through the use of photo-process methods of producing silk screens, halftone reproductions can be made of almost any subject.

Where size limitations make lithography impossible, or small quantities (up to a thousand or so) of displays or signs are required, the silk screen method of printing is both practical and economical.

Lithographing: This is produced by very much the same method as is used in gum printing. The difference lies in the method employed in transferring the paints or inks in making the lettering or designs. Lithographing is also done on the flat, full-size sheet and ranges from the simplest effects in one-color coatings to the reproduction of the most intricate designs.

HEADQUARTERS FOR CREATIVE LITHOGRAPHY

YOUR aim is to sell more goods . . . our desire is to help you. These examples of the creative advertising material that flows from the Forbes plant, with colorful, creative art maintained at its power peak, indicate how we've helped others — sound merchandising ideas exquisitely reproduced, every one; and each a sound reason for you to **Consult FORBES for Creative Coöperation**

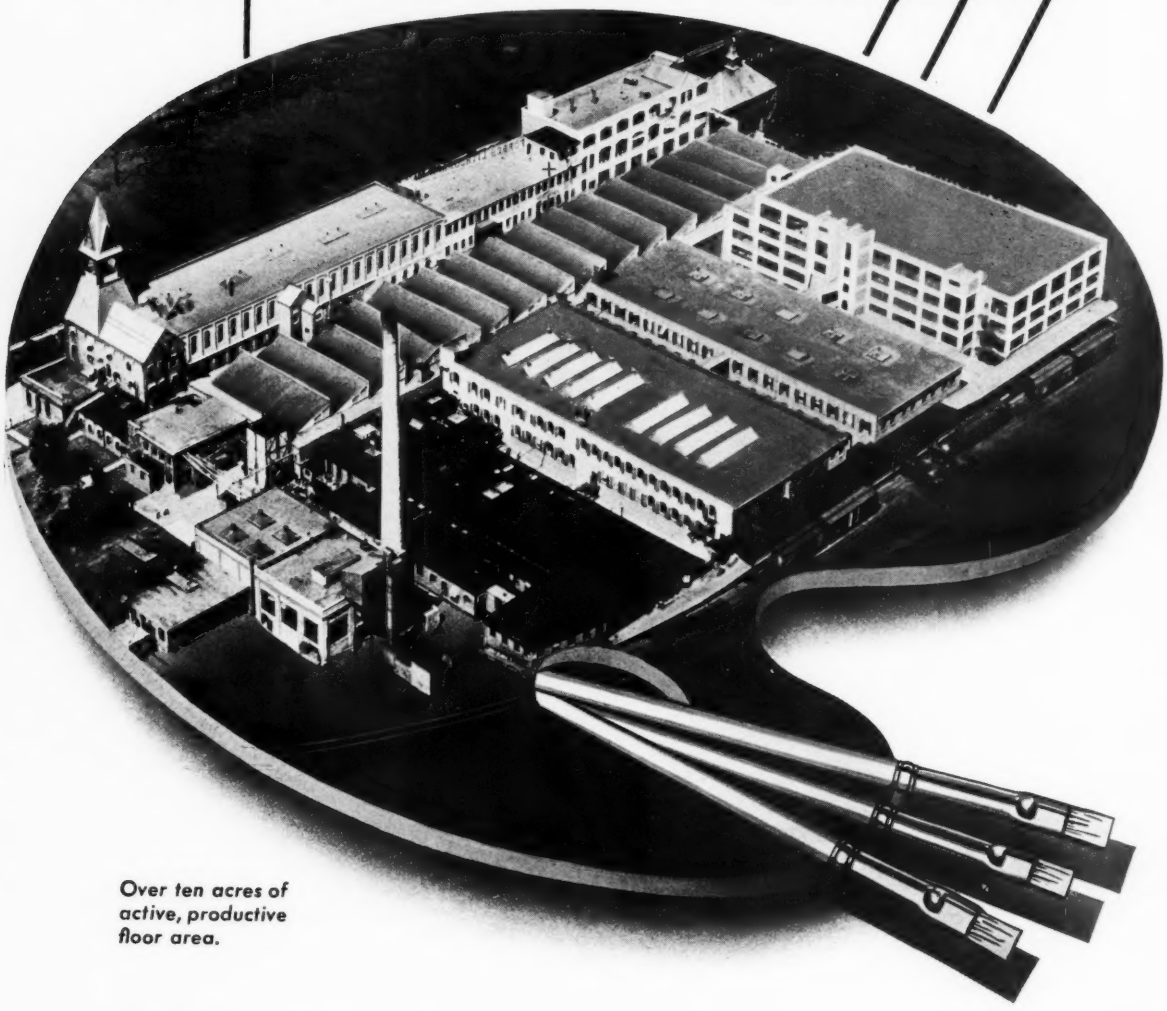
FORBES LITHOGRAPH CO.

P. O. BOX 5P3 F. BOSTON

NEW YORK CHICAGO CLEVELAND ROCHESTER DETROIT

XUM

Headquarters For *Creative Lithography*



Over ten acres of active, productive floor area.

Products of **FORBES** creative ingenuity, stemming from sound merchandising judgment, and an understanding of buying habits.

DISPLAYS and POSTERS
COUNTER MERCHANDISERS
CARTONS, LABELS, WRAPPERS
PRINTED CELLOPHANE
PACKAGE INSERTS
BOOKLETS and FOLDERS
CALENDARS and ART PLATES
BUSINESS STATIONERY

Produced by craftsmen — on precision equipment . . . in this modern lithographing and printing plant . . . noted for quality production.

FORBES THE SHOP BY THE SEA **LITHOGRAPH CO.**

P. O. BOX 513 • BOSTON

NEW YORK CHICAGO CLEVELAND ROCHESTER DETROIT

Wire Merchandise Displays

Nothing, with the possible exception of glass, offers as much opportunity for product visibility as wire. Viewed from front, side or even the back the product can easily be seen. This means concentration of attention on the product rather than the display.

Many combination displays using wire with cardboard, sheet metal, wood, acetate sheet materials, plastics or wallboard have been developed. The use of acetate or other rigid transparent sheets with wire offers interesting effects. The acetate sheets can be cut in any shape and provide a transparent covering that protects products from dust and theft. An advertising message can be printed on the transparent acetate and this gives the appearance of having the words suspended in mid-air.

Wire adapts itself well to all sorts of shapes. As a result, trade characters used in publication advertising spring to life in wire form as part of many displays. They may be entirely of wire, wire and carved wood, or wire and sheet metal. In some instances a trade character has been made life-size of some light material, such as cardboard, and a wire backing provided to support it so garments could be hung on the figure.

Wire displays can be made in practically any size from a small dispenser for packages of razor blades to large bakery racks that hold several hundred loaves of bread. Racks have been built to carry loads of 1000 to 1200 lbs. For practical purposes it is best to limit weight to not more than 700 or 800 lbs., as the cost of reinforcing is usually rather high.

The manner of construction often makes it easier to prepare a folding or collapsible rack of wire than of other materials. This is a decided advantage in shipping. Classifications for racks when figuring freight costs are: folded flat, third class; folded other than flat, first class; set up, first and one-half. Wire displays not only are free from bulkiness but they generally are light in weight.

The ability to form wire shapes of practically any design makes it possible to display the product in full view. Wire displays can be made to show gloves, hosiery, sweaters and other such items, the display following the lines of the product. When such a display is made and the trade name included in wire formed

Acknowledgment is made to C. D. Davenport of the Union Steel Products Co. for aid in the preparation of this article.

Cross References: Displays; Design, Distribution and Installation, page 346; Paperboard Counter Displays, page 349; Floor Stands and Island Displays, page 356; Decorated Sheet Metal Displays, page 359; Plastic Displays and Fixtures, page 366; Wooden Displays and Cabinets, page 368; Displays: Miscellaneous Types, page 374.

1. Wire and sheet metal combine to form an effective counter display for tooth brushes. Photo courtesy Display Case Co. **2.** The wire structure holding the tennis rackets and tennis ball containers pivots on the wire base. Photo courtesy The Washburn Co. **3.** Rigid, non-folding type of wire floor merchandiser, offering full visibility for the products. Courtesy Union Steel Products Co.

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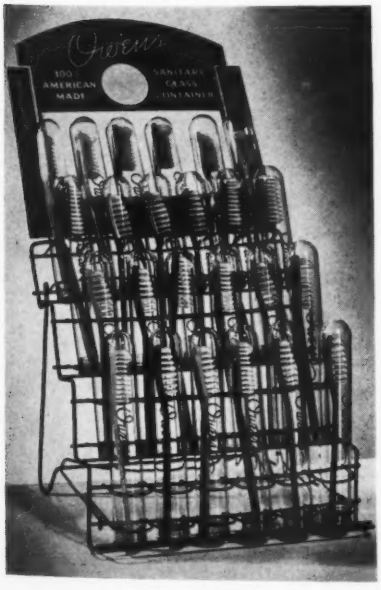

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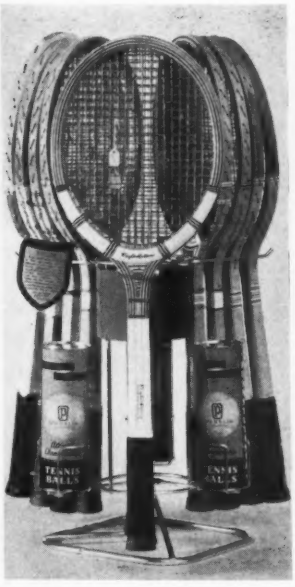

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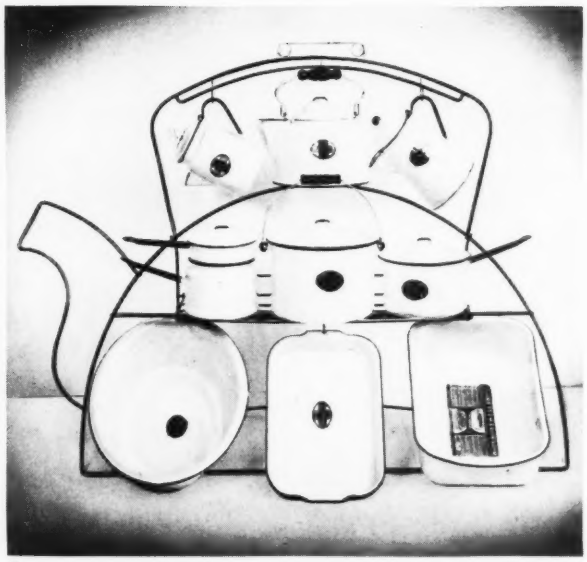

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4. A tamper-proof wire floor stand. The necks of the bottles are locked in place by means of a hinged hook attached to the rack. Photo courtesy Central Wire Frame Co., Inc. **5.** A wire display, in the form of a tea kettle, holds a number of cooking utensils in easily seen positions. Photo courtesy The Washburn Co. **6.** A wire and sheet metal counter display. Courtesy Union Steel Products Co. **7.** A revolving counter display with five wire tracks, each holding ten packages. Courtesy Manhattan Wire Goods Co.

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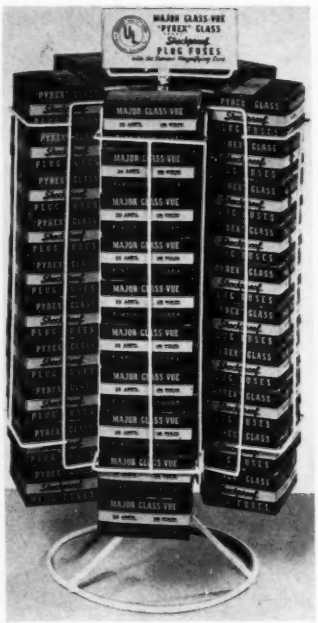

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letters, the manufacturer is assured that the display will be used for his products and no others.

Another feature of wire displays is that they are now designed so they are easy to put together. Seldom are bolts or screws used. Clips, hinges and other devices are the accepted methods. Great improvements have been made along this line, no tools or mechanical knowledge being necessary to put them together easily.

The most economical finish is either paint or enamel. Plated finishes are more durable, scuff-proof, scratch-proof and fade-proof, but lack the appeal and warmth of color. Tin or galvanized finishes are very lasting, but because they "freeze" wires together and fill over loops or openings in the wire, they are not recommended for folding or collapsible racks.

Least expensive of the plated finishes are bright copper and bright zinc. Bright nickel, Udylite and chromium are also available and the cost is about in the order named with bright nickel being the lowest in price.

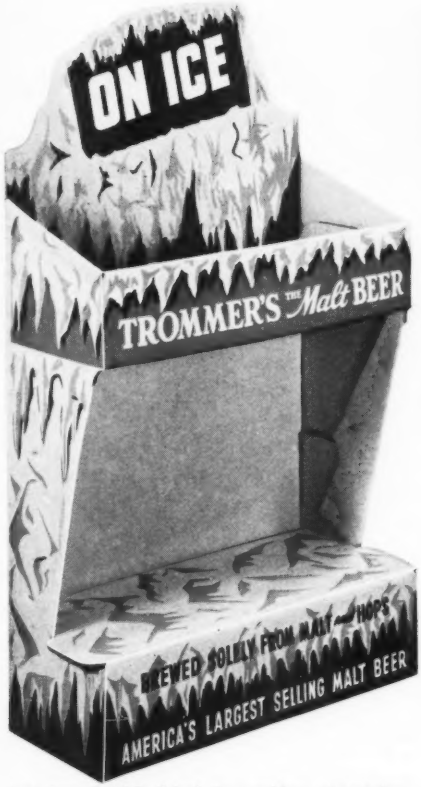
Chromium is a very popular finish and methods have been worked out whereby a very good imitation of polished chrome can be obtained without the costly polishing process. However, to get the fullest value from chromium and to obtain a mirror-like finish, the display should be polished. This adds considerable to the cost, but is often worth it.

Wire displays may be finished with aluminum bronze paint or colored lacquer. Ordinary aluminum paint has the disadvantage that it rubs off and does not stand up well under use. Some display manufacturers have reached a high degree of perfection in the development and use of aluminum bronze paints.

There is no limit to the colors obtainable in lacquer or enamel finishes, although display manufacturers usually standardize on from ten to fifteen colors. Displays finished in these stock colors are less expensive than if some special color is required.

Signs may be made of sheet metal—either lithographed or silk screen process—or they may be formed from wire. Wire formed signs are usually limited to a few words, but they give an unusual, definitely modern effect.

Manufacturers of display racks are usually well equipped to give ideas and suggestions. Some have their own designers who can submit sketches of proposed displays. Frequently samples are made up and the final display worked out from them. In asking for suggestions, it is well to give the size of the package, number you wish to display, price limitation for the rack, type of display (folding, rigid or knock-down), style (counter, floor, wall, etc.), weight the display must carry and which products are to be featured.



Look how ORPCO licked the problem of creating "something different" for Trommer's Beer. This display stand had to be more than attractive... it had to be sturdy enough to support a large quantity of heavy merchandise. It's a practical self-service display.

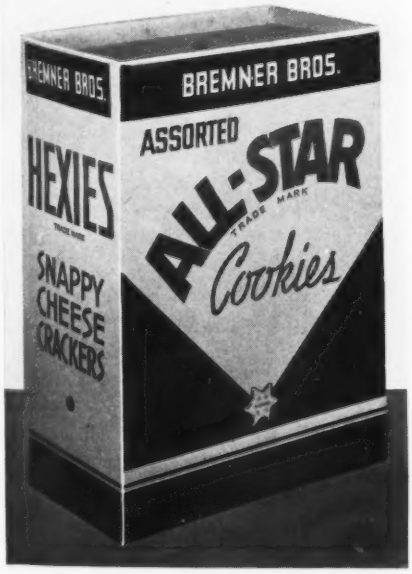
SALES GO UP when displays go up!

. . . and here's how to get dealers to set up "SELLING DISPLAYS" OF YOUR PRODUCT

● Every sales manager knows how mass displays speed up turnover . . . but to induce dealers to give your product display preference isn't usually easy. Here's the way many of the nation's most successful merchandisers secure choice floor and counter display space for their merchandise: They provide ORPCO Display Units. These modern merchandising displays are attractive and practical . . . made of strong corrugated board and cleanly printed in bright colors . . . individually designed to fit the product in size, style and color.

We have successfully applied our merchandising display experience and facilities to a wide variety of products. Displays pictured here are typical examples of ORPCO "merchandise sellers". Let us help you with your next display problem. For expert counsel, write or phone our nearest office.

ORPCO DISPLAYS ARE SURPRISINGLY LOW IN COST



Above—This simple counter "jumble basket" boosts sales of an "impulse" item. Left—Bremner Bros. Cookies certainly hold the spotlight when displayed on this trim floor stand. Right—By simulating an actual display of stacked cases, this piece achieves a mass effect for an item that does not lend itself readily to a large quantity set-up.

THE OTTAWA RIVER PAPER COMPANY • TOLEDO • OHIO

SALES OFFICES:

55 West 42nd Street, New York, N. Y.
6970 W. Jefferson Street, Detroit, Mich.
82 West Washington Street, Chicago, Ill.
701 North Eutlaw Street, Baltimore, Md.

Plastic Displays and Fixtures

Plastics have achieved wide usage in the fabrication of displays because of the unique combination of qualities which they afford. The increasing number of plastic materials available for display purposes and improved methods of plastic fabrication have continued to open opportunities in this field which display users have been quick to explore and exploit. For more or less elaborate displays which are produced in small quantities—as few as a dozen or two—the machinable plastics, such as the cast resins and the methacrylates, are well adapted. When substantial quantities are required, the molded materials, including ureas, phenolics, methacrylates and polystyrenes, offer design possibilities and production economies which make them particularly attractive. Whether displays are machined—cut, drilled or polished—or fabricated on molding presses, they provide the user with a permanent fixture which is colorful, attractive, sturdy and capable of intricacies of design not readily available in other materials.

Because plastic displays do not readily show wear—since color runs all the way through the material—they have achieved widest adaptation for counter merchandisers, change makers and similar purposes where the unit comes into constant contact with the consumers' hands. The high finish and long life of plastic materials has suited them also for use on display signs of all types and particularly for wall fixtures, back-bar displays and similar uses. In such cases, a plastic display can be set up and, except for an occasional dusting, will require no further attention through many years of use.

The translucent and transparent plastics are frequently used in conjunction with light mechanisms and a number of very ingenious effects have been achieved in this field.

All plastics lend themselves to lettering. Sheet materials, such as the cast resins or the laminated ureas or

Cross References: Plastics for Packaging, page 318; Thermoplastic Materials, page 320; Thermosetting Plastic Materials, page 322; Cast Plastic Materials, page 330; Plastic Molding Methods, page 332; Displays: Design, Distribution and Installation, page 346.

1. A group of plastic display signs showing the wide variety of effects which can be achieved in this medium.

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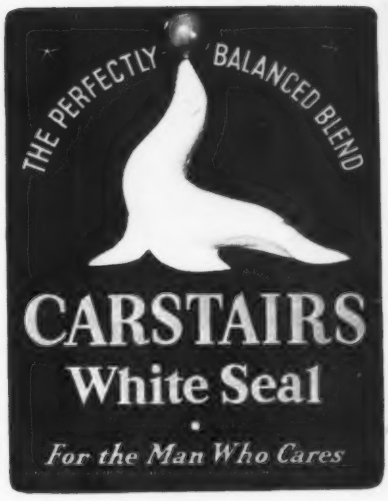

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2. Wall sign with provision for the insertion of changeable signs. Molded of acetate, the panel is colorful yet easily cleaned. Photo courtesy Monsanto Chemical Co. **3.** Wire counter display with urea molded red cross. Photo courtesy Beetle Products Division, American Cyanamid Co. **4.** A molded plastic seal and ball molded to blue glass mirror with silk screen lettering to create an attractive display. **5.** A long-time user of plastic merchandisers is the American Chicle Co. which recently introduced these two new types to retailers. Molded of phenolic material. Photo courtesy Bakelite Corp. **6.** Clear, transparent methyl methacrylate sheet is used to fabricate these ring holders and the accompanying display. Photo courtesy Röhm & Haas Co. Inc.

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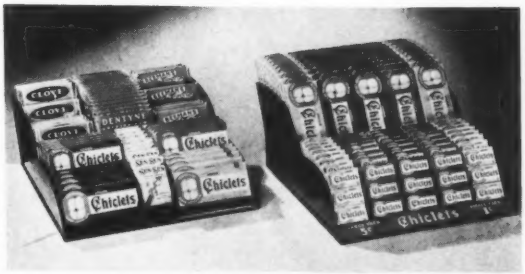

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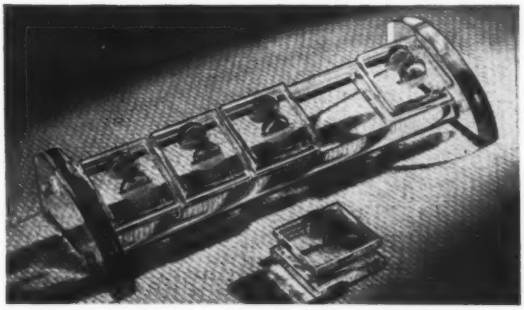

phenolics, can be jigsawed into letters and designs. Pyroxylin materials are frequently die-cut into letters or other figures and molded to achieve relief effects. The molded materials can achieve lettering in a number of ways with raised or incised characters, with metal inlays or with roll leaf process printing in gold and silver. Incised letters can be colored to contrast with the molded material by the wiping-in of paints or pigments. Decalcomanias and transparent labels are also sometimes used to apply lettered identifications to plastics.

Design of plastic displays is limited only by the ingeniousness of the designer and by his knowledge of plastic materials and plastic production processes. While it may be taken as a general rule that plastics are best suited to the small and medium sized unit, some displays of fairly large dimensions have been successfully manufactured at reasonable cost. When plastic molding is utilized, it is possible, in a single operation, to fabricate a complete unit including parts and compartments which —in any other material—would require a number of fabricating processes.

For the advertiser inexperienced in the use of plastics, the best procedure to follow is that outlined in the sections of this Catalog dealing with plastic packages. While the basic design must, of course, stem from the advertiser's merchandising needs, he will find it profitable, at an early stage in development of design, to consult with and take the advice of a plastic molder or fabricator and the plastic material suppliers. By so doing, he may find it possible to make slight changes in the basic design which will vastly simplify production processes with a consequent speeding up of deliveries and substantial reduction in costs.

Cost is, of course, always an important consideration, for display design and plastic materials are not among the least expensive. However, the economies of quantity production by plastic molding processes frequently result in a lower unit cost over a quantity run as compared with any other suitable material which must be fabricated by a more laborious process. Thus, despite relatively high material cost, the end cost in plastics is frequently the lowest.

Wooden Displays and Cabinets

Wood counter merchandise displays occupy a rather unique position in the display world. They are so constructed as to be of permanent value. The manufacturer who furnishes them to his trade expects more than a temporary place on dealers' counters. He expects the dealer to use the display as a fairly permanent fixture. He knows that a counter display will move his merchandise from a hidden place inside the counter to a strategic at-the-point-of-sale position on top.

Wood counter displays of this type are used three ways: In most cases they are tied up with a merchandising deal. The manufacturer groups together an assortment of merchandise usually including a new product whose introduction he wishes to dramatize. The display is a part of the deal, its cost being included in the price of the deal. Since it is in the retailer's interest to feature the display on his counter, the manufacturer is automatically assured that his products will have the best possible selling position.

In some cases, the display is sent out by the manufacturer to help move merchandise that the dealer has already purchased. In this latter case, there is no tie-up with an assortment of merchandise. The display is sent gratis to the dealer, in order to help him sell the merchandise which he had previously purchased.

In other cases, the display is used to help introduce a new product. In these instances, the display is sent to the dealer irrespective of the amount of merchandise he buys, so as to insure a prominent position on the counter for the introduction of the manufacturer's new item.

In every case, wood counter merchandise displays are made up in a style and of materials such as the dealer himself would use were he ordering the display himself

Acknowledgment is made to Milton Weill of the Arrow Manufacturing Co., Inc. for aid in the preparation of this article.

Cross References: Permanent and Re-Use Boxes, page 94; Rigid Transparent Displays, page 150; Displays: Design, Distribution and Installation, page 346; Paperboard Counter Displays, 349; Floor Stands and Island Displays, page 356; Decorated Sheet Metal Displays, page 359; Wire Merchandise Displays, page 363; Plastic Displays and Fixtures, page 366; Displays: Miscellaneous Types, page 374.

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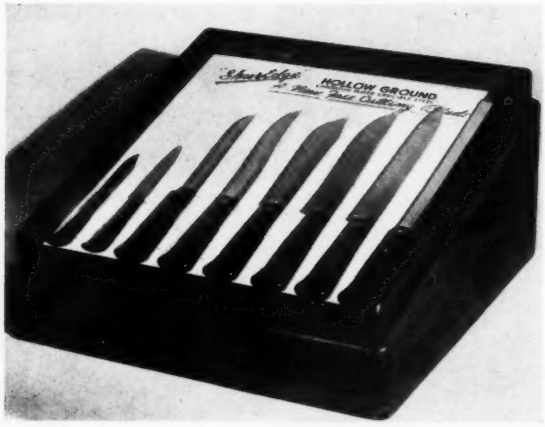

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1. Wooden display cabinet with transparent acetate sheet top and rear compartment for materials storage. Courtesy Eastman Kodak Co. **2.** Small wooden counter unit for open display of merchandise. Courtesy Alfa Display Co. **3.** Lighted wooden unit for window or counter use. Courtesy Kay Displays, Inc. **4.** Wooden unit of intricate construction with transparent acetate windows and removable panels and stock drawers. Photo courtesy Arrow Manufacturing Co., Inc.

METAL DISPLAYS

FOR PRODUCT PRESTIGE!

- *Last Longer*
- *Look Better*
- *Sell More Goods*

Dealers like metal displays better. They immediately give your product prestige in the dealers' eyes. And that means your package will get the display space it needs to do a really fine selling job.

Metal displays are not only richer in appearance—they also last longer. They're on the job selling goods long after displays made of less sturdy materials have given up the merchandising ghost.

Our design department will create a beautiful and economical metal display for your product, without obligation. Our plant will produce a thousand or a million displays of uniform high quality at economical manufacturing costs.

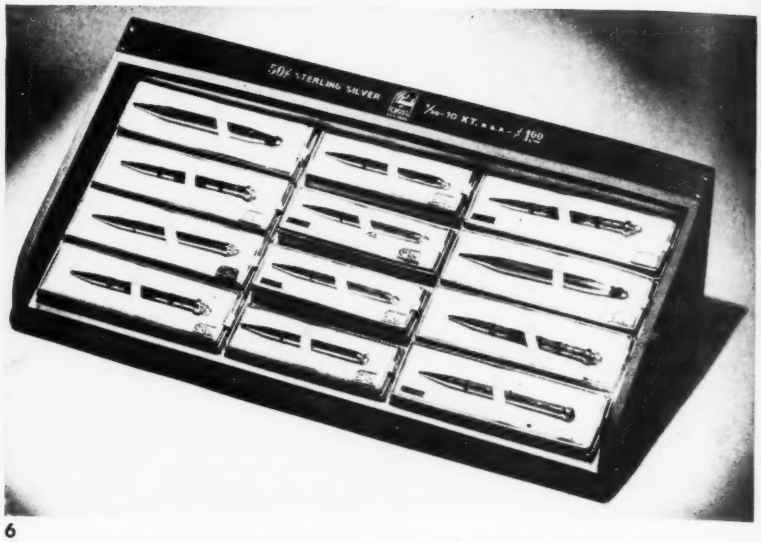
High grade color lithography, or brilliant DuPont Hi-Baked Dulux silk screen processes are available. Write for illustrated booklet. Tell us your problem and we'll suggest some appropriate display designs. Remember, there is no obligation for our service.

ADVERTISING METAL DISPLAY COMPANY

Factory and General Offices: 822 West Washington Blvd., Chicago

Eastern Division: 2 East 23rd Street, New York, N. Y.

XUM



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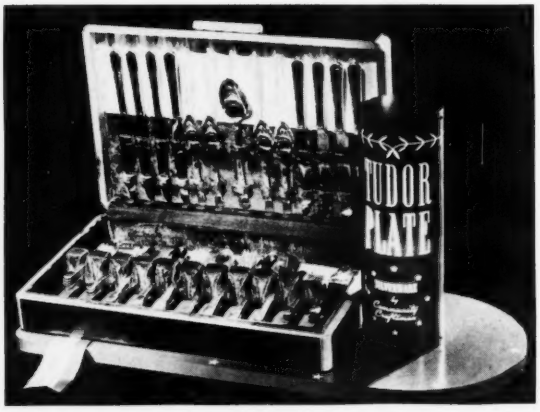
5. Floor stand constructed of plywood panels ingeniously arranged to be self-reinforcing. **6.** Counter stand combining transparent acetate with a wood structure. Platform tray is withdrawn from rear to give access to merchandise. Fabricated by Rueckert Manufacturing Co. Photo courtesy Monsanto Chemical Co. **7.** A simple display which utilizes a wooden package as an essential element. The unit consists of platform and illuminated pylon sign. **8.** Cosmetic displays frequently incorporate product selection aids. Colored discs in the foreground of this one facilitate the selection of powder shades. Photo courtesy Arrow Manufacturing Co., Inc.



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for his own store. Wood is usually combined with glass or mirrors, with chrome, brass or other types of ornamentations added for decorative purposes. Frequently provision is made for illumination either in the form of a steady burning electric light or a flasher bulb—either provision making for increased effectiveness.

In every case, this type of display must be used only for the display of merchandise. It serves no function whatsoever when used by itself, being as its name implies primarily a merchandising unit. It forms a background or setting for the proper presentation of the product. Extra compartments for reserve stock are often provided. An additional advantage of this type of display is that it will remind the dealer to restock when the sale of an item leaves an empty space and makes the display, therefore, less attractive. This reminder forces the retailer to keep a closer check on his stock, thus compelling him to reorder more frequently.

It is interesting to note that displays that have a novelty appeal because of their seasonable tie-up, or displays that have moving parts which enable the consumer to play with the display, are of definite value in attracting the eye and holding the attention of the prospective customer. The same holds true of displays which enable the consumer to sample a product like powders or perfumes or displays which have a self-service feature.

It has been found that mirrors on wood displays of this type not only increase attractiveness to the display itself, but really draw the consumer, particularly the female, to the display for the obvious purpose of using the mirror. Once this line of attraction has been established, it is an easy sequence for the looker to become a buyer of the product displayed.

Since wood displays do not involve the use of any special dies, for obviously wood can be cut to almost any shape, there is great flexibility in the type of design that can be created.

The advertising message on a wood counter display must necessarily be very brief. Usually the name of the product itself with possibly a listing of the items and prices are all that can be used.

DIRECT *Advertising*

VIA STORE DISPLAYS

IN terms of effective circulation, store displays and posters provide maximum controlled sales power at minimum cost. Consumers are repeatedly responsive to suggestions presented in dramatic manner at the sales-spot. Dealers are quick to use materials which have power to speed sales.

But only when the lithographic reproduction is fully adequate does your sales idea reach the consumer with maximum power . . . Choose your lithographer as carefully as you select and develop the sales idea.

The UNITED STATES PRINTING & LITHOGRAPH COMPANY
AND DIVISIONS

Plants at CINCINNATI • BROOKLYN • BALTIMORE • ERIE, PA. • ST. CHARLES, ILL.
HOME OFFICE 341 BEECH STREET, CINCINNATI, OHIO

LITHO. IN U. S. A.

XUM

DIRECT Advertising

WHEREVER YOU ARE LOCATED...

One of our offices is near you, and our representatives are at your call to help develop products that will do direct advertising for your products.

ATLANTA
601 Forsyth Building.....Jackson 1811

BALTIMORE
Cross and Covington Sts.....SOuth 1403

BOSTON
Room 658 Park Sq. Bldg.HANcock 0133

BROOKLYN
85 N. Third St.....EVergreen 8-4400

BUFFALO
317 Jackson Bldg.....WAshington 5346

CHICAGO
121 W. Wacker Drive.....STAte 2778

CINCINNATI
Robertson and Beech Sts..JEfferson 2160

CLEVELAND
1104 Leader Building.....CHerry 2393

DETROIT
401 New Center Bldg.....MAdison 1170

ERIE, PA.
State at Fourth.....25-641

KANSAS CITY
509 Fairfax Building....HArrison 5616

MILWAUKEE
759 N. Milwaukee St.....DAly 2250

MINNEAPOLIS
301 Metropolitan Bk. Bldg..MAin 8577

NEW YORK
105 Hudson St.....WAlker 5-5620

PHILADELPHIA
644 Drexel Building.....Lombard 1702

PITTSBURGH
706 Renshaw Building....Atlantic 1526

SAN FRANCISCO
112 Market St.....Garfield 2262

SEATTLE
602 Hoge Building.....Main 4344

ST. CHARLES, ILL.
14th and Indiana.....2900

ST. LOUIS
737-742 Paul Brown Bldg....Main 2621

products which will do direct

products:

★ **Packaging Materials:**
- Labels
- Box Wraps
- Cartons
- Package Inserts
- Display Containers

★ **Point-of-Sale Materials:**
- Display & Show Cards
- Cutouts
- Window Displays
- Store Hangers & Banners

★ **Outdoor Materials:**
- Billboard Posters
- Three-Sheet Posters
- Street Car Cards

★ **Sales Service Materials:**
- Booklets
- Broadsides
- Calendars

AMERICAN LITHOGRAPHIC DIVISION
ATLANTIC LITHOGRAPHIC & PRINTING DIVISION
DONALDSON LITHOGRAPHING DIVISION
ERIE LITHOGRAPHING & PRINTING DIVISION
PALMER ADVERTISING SERVICE DIVISION
W. F. POWERS DIVISION
THEO. A. SCHMIDT LITHOGRAPHING DIVISION

Motion and Light Mechanisms

The use of light, motion and the illusion of motion—either singly or in combination—has long been accepted as a means of increasing attention value of displays. While not acceptable to all products or in all display situations, these devices have, in numerous cases, produced substantial increases in the effectiveness of display themes. Motion devices tend to add substantially to display costs and hence can be utilized only in key outlets or where long-term use of the display can confidently be anticipated.

Types of Mechanisms

Various types of standardized motion-producing mechanisms are available, usually being purchased for installation into the display by the lithographer, display builder or metal-display producer. These include:

CLOCKWORK MOTORS: Low in cost, but requiring periodic winding and hence unsuitable for units placed in inaccessible windows or where the dealer cannot be counted upon to show the necessary interest.

ELECTRIC MOTORS: Operated from house current, available in AC, DC and universal types and in widely varying power and price groups.

BATTERY MOTORS: Operated from dry cells, but otherwise similar to the house current types. Essential in some isolated areas or for export where voltages, etc., are unknown.

SOLINOID MOTORS: These are simple electrical devices which create a reciprocating motion and which may be converted into other forms of motion by supplementary mechanisms. They are low in cost and simple to set up and operate. Their sturdiness is an important factor. Both battery and house current types are available. Solinoids are further grouped as "plunger" and "pendulum" types.

FLASHERS: These are devices to cause an intermittent flow of current and thus light one or more bulbs for pre-arranged periods. Types vary from the simplest to extremely complex arrangements for securing rather elaborate effects.

HEAT MOTORS: These achieve motion by the action of rising heat currents, usually from an electric bulb, upon vanes attached to the device. A rotary motion is thus secured in conjunction with light.

TURNTABLES: Either motor driven or activated by clockwork. These can be had in types to support various weights. Some operate at fixed speeds, others are adjustable. Some types use so-called stops to secure an alternating partial revolution with an intervening period at standstill. These stops are adjustable so that the table can be set from three stops per revolution to as many as twelve or even more

Cross References: Displays: Design, Distribution and Installation, page 346; Paperboard Counter Displays, page 349; Decorated Sheet Metal Displays, page 359; Wooden Displays and Cabinets, page 368; Displays: Miscellaneous Types, page 374.

1. Lithographed panel display with arm and paint brush pivoting on oscillating motion device. Courtesy Einson-Freeman Co., Inc. **2.** Counter display with stereopticon viewing device and consumer activated dial to demonstrate working of product. **3.** Motion effect achieved through use of light. The character's eye winks on and off and the words "He Knows" light with a neon effect. The recessed cabinet for the bottles likewise lights intermittently. Photo courtesy Einson-Freeman Co., Inc.

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stops. The number of degrees of motion between stops can be adjusted so that, for example, a half revolution may be followed by two quarter turns.

VIBRATORS: Either electrically operated (house current or battery) or clockwork types are available when a fast vibratory motion is desired.

Design of Motion and Lighted Displays

Makers of motion mechanisms and lighting devices seldom sell directly to the display sponsor. They do, however, work closely with both sponsor and display manufacturer—i.e., lithographer, metal display fabricator, etc.—in adjusting or modifying their devices to secure the desired effect. It is usually best to call in the display manufacturer, who will assume final responsibility for the complete unit, and to work through him. In all cases, a full-size operating dummy should be made and tested under actual operating conditions.

Certain considerations will tend to govern design, apart from those of advertising effectiveness. The cost of the unit as a whole will, of course, affect the choice of motion mechanism. Operating costs will prove important to certain classes of dealers and should be thoroughly checked in advance. In the case of battery-operated displays, advance planning should correlate between the probable period of installation and the life of the battery or batteries under the current-demand conditions imposed by the display. Shipping of mechanized displays always requires more care and greater expense than is called for by non-mechanized displays.

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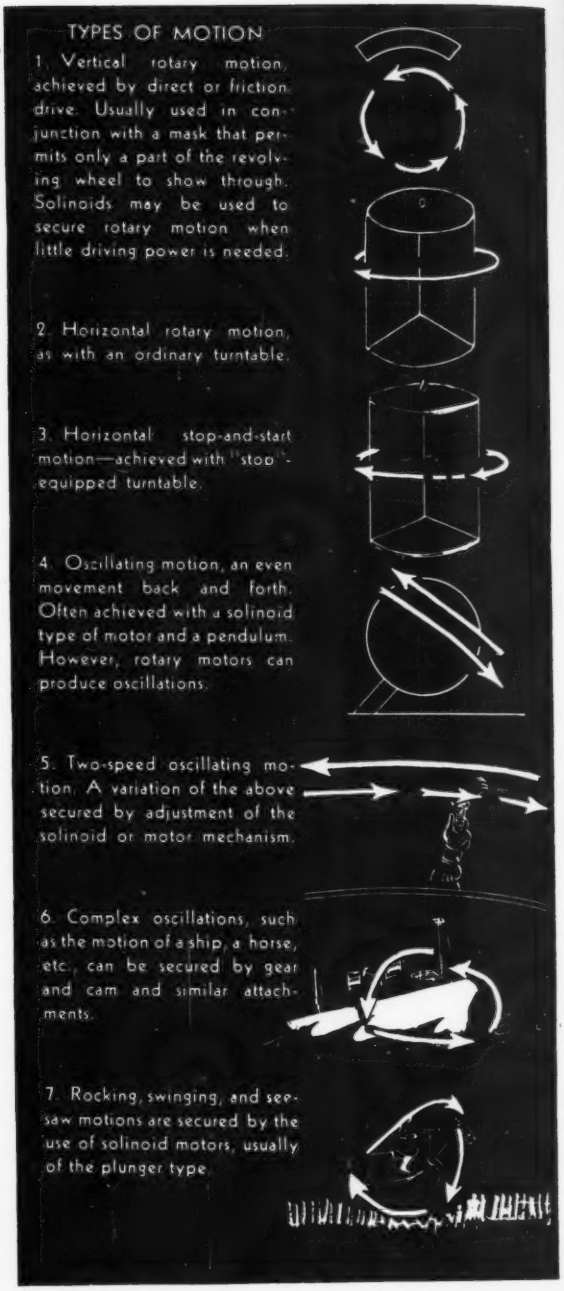
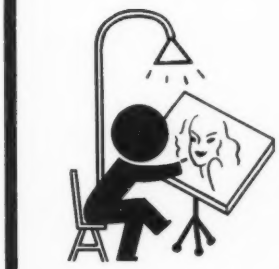

TYPES OF MOTION
1. Vertical rotary motion, achieved by direct or friction drive. Usually used in conjunction with a mask that permits only a part of the revolving wheel to show through. Solinoids may be used to secure rotary motion when little driving power is needed.
2. Horizontal rotary motion, as with an ordinary turntable.
3. Horizontal stop-and-start motion—achieved with "stop"-equipped turntable.
4. Oscillating motion, an even movement back and forth. Often achieved with a solinoid type of motor and a pendulum. However, rotary motors can produce oscillations.
5. Two-speed oscillating motion. A variation of the above secured by adjustment of the solinoid or motor mechanism.
6. Complex oscillations, such as the motion of a ship, a horse, etc., can be secured by gear and cam and similar attachments.
7. Rocking, swinging, and see-saw motions are secured by the use of solinoid motors, usually of the plunger type.

7

4. In use for many years, this scratching pup, motion display is one of the most successful ever developed. Courtesy Einson-Freeman Co., Inc. **5.** To demonstrate a novel package structure, this electrically operated platform unit moves dummy loaves back and forth to simulate consumer's action in "breaking" package. Courtesy Stemar Displays Co. **6.** Miniature carousel formed of paper and wood rotates on a turntable. Side panels are not mechanized. Courtesy Kay Displays, Inc. **7.** Chart illustrates various types of motion which can be achieved with standard devices.

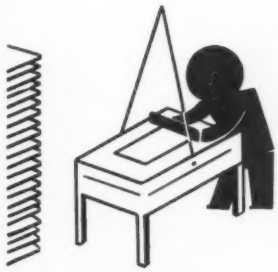
Under One Roof---

CONSTRUCTION

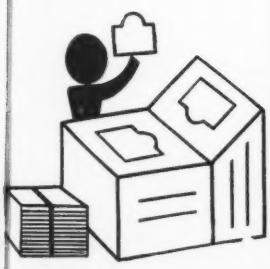


ARTWORK

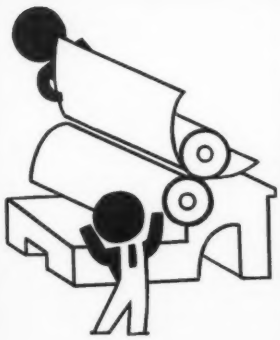
PRINTING



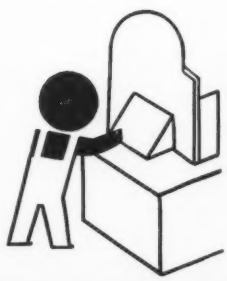
SILKSCREEN



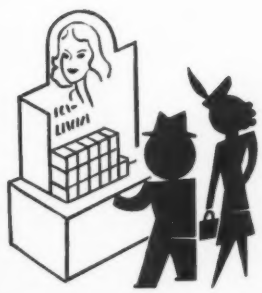
DIE-CUTTING



MOUNTING



FINISHING



DISPLAYS *that SELL*

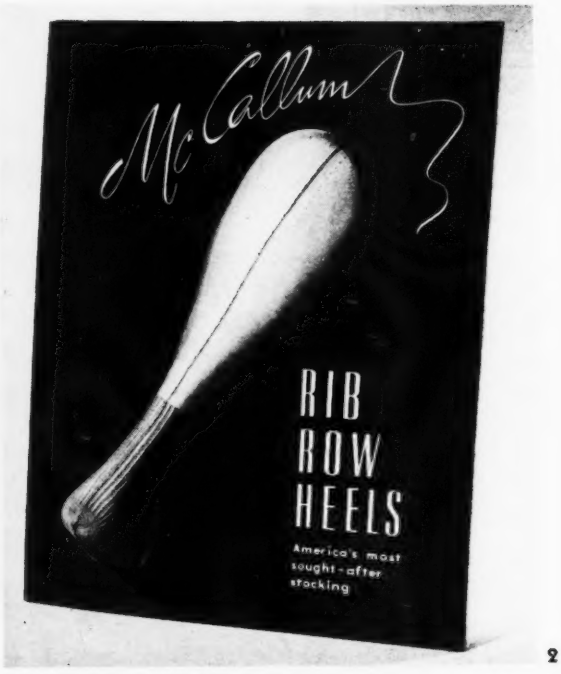
Combined, the little men make a fast team. No running from printer to artist to finisher. They're *all here*, under one roof. Deadlines are things the little fellows always meet, even when it seems humanly impossible to do so. In fact, they're almost inhuman the way they work. Not only fast, but *good!* Smart layout, good artwork, precise production. The little chaps are really something to watch. Come and see—or, better still, send us a tough display problem for them to work out on.

MERIT DISPLAY CARD CO.

New Address: 120 East 16th St., New York *New Phone:* GRamercy 5-2802

Displays: Miscellaneous Types

1



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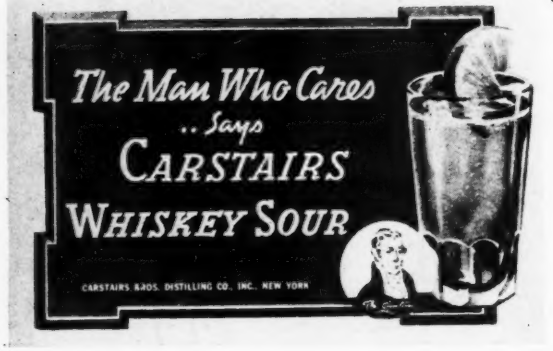

Since the effectiveness of displays is dependent, in large measure, upon the novelty of their appearance and the consequent eye-attracting powers they possess, packagers have been willing to experiment with new materials in this field. An almost infinite variety of such materials have been tried here and there. In this article, we discuss only those materials which have achieved a substantial measure of adaptation.

Decalcomania

Decalcomania transfers are produced by lithographic processes and are designed to permit the transfer of signs, illustrations, etc., from a carrying paper to a permanent position on window glass, display cabinets, metal fixtures or other points of vantage. They have been very widely used for window valances, for permanent signs affixed to the glass of store door entrances and for the decoration of interior store fixtures. The process permits the use of an almost infinite number of colors and the attainment of highly decorative effects. Application for transfer takes but a few moments under the hands of a skilled operator and can even be performed, under instruction, by the dealer himself. Once properly applied, a decalcomania becomes a permanent form of display capable of withstanding many years of weathering, cleaning and wear.

Pressure Molded Clay

Clay and other statuary materials have, for many years, been utilized to form small statuettes, particularly by the liquor trades. Recently developed processes utilize pressure molding in dies to form these units at relatively high speeds and consequent low cost. Decoration may be applied by silk screen, hand painting, gun spraying or decalcomania. To gain strength where complicated shapes are utilized, interior structures of wire mesh or metal rod are sometimes used as reinforcements.

Cross References: Rigid Transparent Containers, page 104; Displays: Design, Distribution and Installation, page 346; Motion and Light Mechanisms, page 371.

1. Left. High-relief plaque molded of asphalt treated paper and decorated with wood-effect background and gold lacquered raised letters. Right. Die-cut block board (pasted multi-layer cardboard) display faced with decorated foil. Photos courtesy Chaspec Manufacturing Co. **2.** Cardboard counter display die-cut to accept flanged papier mâché form draped with section of stocking. Photo courtesy Merit Display Card Co. **3.** Multi-color back bar mirror decalcomania.

CHASPEC MANUFACTURING CO.

16 West 61 St. **NEW YORK, N. Y.** Circle 6-3530

CHASPEC displays add a third dimension . . . a new realism and appeal . . . to point-of-sale merchandising.

These displays are permanent . . . designed, embossed, and printed for long term salesmanship. Their color, texture, and mass project them into instant attention, raise eyes and fingertips to them.

You yourself have, no doubt, already admired CHASPEC displays in taverns, department stores, restaurants, etc. They appeal to you . . . as they will appeal to *your* buying public.

The materials used comprise cardboard, wood, metal, glass, foil, celluloid and composition. Our processes include printing, stamping, embossing, moulding, laminating, woodworking, silk screening and die-cutting; an enviable combination of manufacturing facilities under one roof.

Whatever your needs . . . whatever your message . . . CHASPEC'S special process of high relief . . . CHASPEC'S 18 years of ingenuity in design and merchandising . . . can create a truly handsome display for your product . . . supplied in any quantity at reasonable cost.

News to the Progressive Package Buyer:
Chaspec has recently developed some new and startling techniques that are now available to the few distinctive firms who appreciate the importance and value that novel and exciting packaging adds to the product.

XUM

Cast Metals

Castings of bronze and other metals are achieving wider use for counter display purposes. Die castings are frequently used, for the shortness of runs usually calls for the use of slush molding. By this process, the molten metal is poured into a mold, permitted a short cooling period and the surplus metal poured out again. The result is a hollow cast shell conforming closely to the shape of the mold. Simple finishing operations prepare the casting for spray painting and other decorative processes. The weight of the casting can be varied—when weight is desired for stability—by lengthening the time of the cooling period.

Latex Compositions

Statuettes for corset and similar displays are frequently molded of a latex rubber composition with interior reinforcements. The moldings are usually hollow, thus conserving material and reducing weight. Decoration is applied through the use of sprayed on or silk screen colored inks and lacquers or the use of integrally colored latex compounds.

Relief Molded Board

Asphalt impregnated paperboards have been developed which can be molded under heat and pressure. These may be faced, either before or after molding, with a variety of materials such as foil or may be decorated, after molding, by spray painting or other processes. When special lacquers are utilized, the units are suitable for exterior display.

Papier Mâché

Papier mâché or molded pulp displays are formed of paper pulp in molds under heat and pressure. They are susceptible to a wide range of decorative treatments and may be used for both interior and exterior display.

4. Pressure molded clay composition display with relief lettering decorated with brilliantly colored inks. **5.** Heavy aluminum foil mounted to asphalt treated paper, molded under heat and pressure, forms this counter unit. Color is applied after molding. Photo courtesy Chaspec Manufacturing Co. **6.** Display stage formed of wood and compostion board with die-cut metallic lettering. Statuette, of composition material, is cast over steel uprights. Photo courtesy Badger Merchandising Displays, Inc. **7.** Lighted display formed of heat treated curved glass. Design silk screened and baked onto the glass. Photo courtesy Cincinnati Advertising Products Co. **8.** A slush molded bronze casting finished in gold and colored lacquers forms this light-weight counter display. Photo courtesy Bronzart Metals Co.

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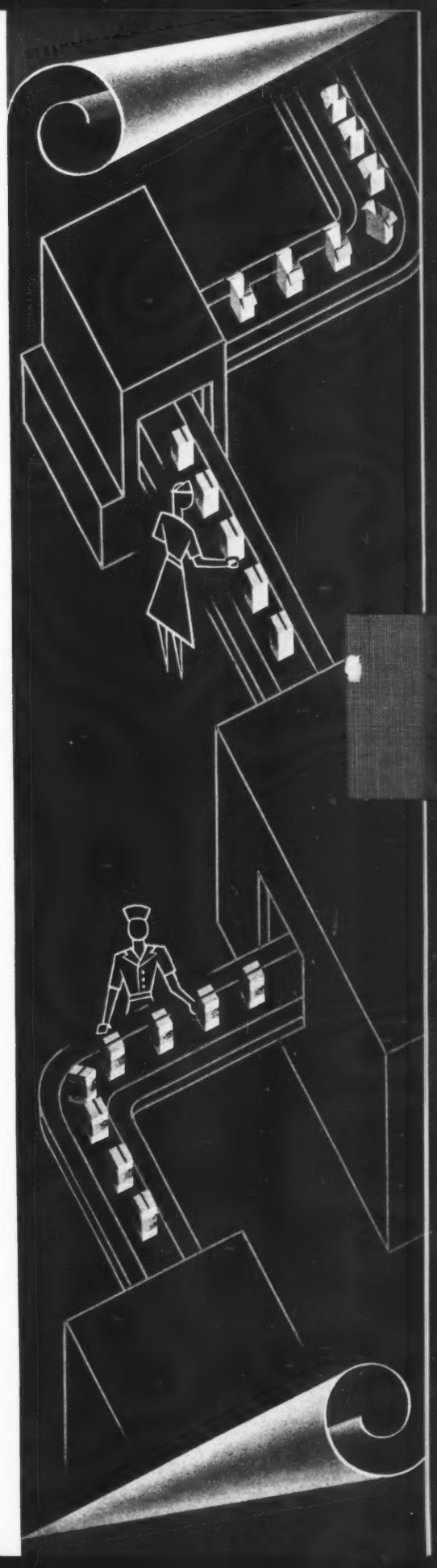
MACHINERY AND SUPPLIES

Section Twelve

Pages 377 to 472

GENERAL CONSIDERATIONS IN MACHINE INSTALLATION
WEIGHING AND FILLING DRY PRODUCTS
CHECK-WEIGHING SCALES AND DEVICES
BOTTLE CLEANING EQUIPMENT
FILLING LIQUIDS AND PASTES
CAPPING AND SEALING EQUIPMENT
LABELING MACHINES AND DEVICES
WRAPPING EQUIPMENT
TIGHT-WRAPPING EQUIPMENT
CARTON LOADING AND CLOSING EQUIPMENT
COLLAPSIBLE TUBE FILLING
BAG FILLING AND SEALING
BOX AND BAG STAPLING EQUIPMENT
CASE PACKING AND SEALING MACHINERY
PACKAGE CONVEYING EQUIPMENT
BAG MAKING MACHINERY
FOLDING BOXMAKING MACHINERY
SET-UP BOXMAKING MACHINERY
FIBRE CAN MAKING MACHINERY
TRANSPARENT BOXMAKING MACHINERY



XUM

General Considerations in Machine Installation

While it may seem to reduce the subject to an absurdity, it is important to remember that the primary consideration in machine installation is whether or not to install a machine at all. If the economic justification for the machine can be found in terms of improved output, lowered costs and a wider market for the product, packagers can ill afford to utilize hand methods or old machinery. If the economic basis for the new installation does not exist as described above, the new machine will merely serve what might well be termed a "purely decorative" purpose.

In making the necessary determination of comparative costs by present operating methods and proposed methods, the packager must take cognizance of a number of economic and productive factors. An examination should be made of the possibility of improving present production methods by the installation of simple jigs and fixtures and the application of time and motion controls. An examination should also be made of the relative operating costs to be anticipated if similar automatic equipment were to be installed. Finally, wherever automatic equipment is available for the job, operating and amortization costs for this category of machinery should likewise be carefully checked. A comparison of these three alternatives of improvement, which takes account of the present daily output requirements and of anticipated future requirements, will then readily disclose which category of improvement will best suit the needs of the packager.

The economic balance as between hand operation and machine operation and as between semi-automatic and fully automatic operation constantly fluctuates. Within the last few years, these fluctuations have been almost entirely in favor of greater mechanization. Wage and hour controls and other regulatory legislation have substantially raised the cost of hand labor. Social Security taxes and Unemployment Insurance taxes have likewise contributed in this direction. On the other hand, electric supply costs (the principal non-labor operating charge against most automatic packaging equipment) have dropped in recent years in many regions.

Individual Plant Problems

Once the basic decision of whether or not to mechanize or re-tool an already mechanized line has been made on the basis of the economics of production, further considerations in respect to machinery installation become

PLANT LAYOUT CHECKING POINTS

Almost innumerable factors may affect the selection of machinery or the relationship between various machines and between machines and other elements in the plant. Since advance consideration of these factors can frequently avoid much difficulty, delay and expense, it is advisable to check every angle carefully before making any commitments as to machinery installation or plant layout. The following check list is based upon a compilation originally made by Clinton E. Kafka with additions suggested by various machinery manufacturers and package plant production managers.

1 The size of door or opening into building through which the machinery must be moved.

2 The size of the largest available elevator and its maximum load.

3 The load capacity of floors and passageways through which equipment must be moved.

4 The load capacity of the floor at point of installation.

5 Location of obstructions and utilities adjacent to point of installation, i.e., sketches to show trucking aisles, sewer and drain pipes, sprinkler pipes, conduits, air conditioning ducts, important fixtures and other immovable structures.

6 Type of floor and ceiling construction, i.e., data governing method of mounting and fastening machine into position.

7 Nature of provision made for vibration caused by machine.

8 Nature of provision to be made to permit machine to withstand other vibration present at point of installation.

9 Under what conditions will the machine be operated: warm, hot, cold, wet, moist, dry, dusty, clean, quiet, noisy, sticky, etc.?

10 Electrical current available.

11 Local safety law requirements and factory's own safety requirements.

12 Local building and factory laws insofar as they relate to movement of machinery into plant, installation and mounting.

13 Local trade union restrictions, where these exist, regarding trucking machinery, rigging, installing machine and installing accessory plumbing, heating, wiring and similar utilities.

14 Union restrictions relating to work of machinery maker's service men during installation, during training period, during test period or at later dates.

highly specialized, varying according to the conditions to be met in each different plant.

The ease, speed and economies of modern packaging methods are largely influenced by the proper placement of equipment in the packaging plant. They represent a careful synchronization between the finished products, ready to be packed, a wide variety of materials used in the packaging operations and the available equipment—all working together so that there may be a natural and progressive flow of products from the very first manufacturing operations to the final shipping.

With the wide variations that exist, such as space available, the physical nature of the product, kinds, sizes and shapes of containers, and fluctuations in quantities, it is obviously impossible to lay down set rules which will apply in all cases. Packaging operations in one plant, for example, may be strictly confined to the packaging of a single product, such as soap flakes, in a standard size unit, utilizing a folding carton, or they may include the complications of the distiller who distributes his products in twenty or more states, each of which has its own requirements as to special labeling or packaging, which must be rigidly adhered to in order to avoid severe penalties or revocation of his operating license, involving over a hundred trade brands, packed in various sizes, in almost four hundred different individual packages, and requiring the efficient and speedy handling of orders for as many as eight thousand units in a single day's production.

Each machine set-up is bound to have its own peculiarities and specific difficulties which, while largely overcome by the manufacturer of the machinery before it is shipped to the customer, do not free the plant owner from responsibility in the location of the machines or from paying attention to matters of detail. There must be a scientific orderliness about the line up of the packaging machinery, all equipment being placed to produce maximum performance, under the particular and peculiar conditions in which it is used.

Layout Determines Operating Methods

Having determined upon the actual packaging method to be used—whether it shall be entirely automatic or a combination of mechanical and manual operations—it is of the utmost importance to place the equipment advantageously in the plant, with particular attention paid to the product supply as well as the shipping department. Customary practice is to avoid as far as possible having all manufacturing, packaging and shipping operations on a single floor, it being found more economical and advantageous to segregate manufacturing operations to one floor, packaging to another and shipping to another, so that advantage may be taken of gravity flow production.

Most manufacturers have found that straight-line production is the fastest, simplest and most satisfactory in packaging operations. However, when space is not available, it is entirely possible to group the equipment in progressive stages, so that by means of conveying

15 Number and size of accessory change-over parts and provision for handling these in the plant.
16 Requirements for special guards or covers to conform with general plant appearance.
17 Limitations on hours of work of installation men, i.e., can they work while plant is operating, can they work at night, will they retard other production, etc.?
18 Space available for uncrating machinery.
19 Availability of additional laborers as required by service men and categories or trades of same. Labor helps available, i.e., lifting machines, jacks, etc.
20 Air pressure requirements.
21 Ceiling heights, hopper heights, etc.

Relations to Adjacent Machines

22 What other machinery will connect up with the installation in question?
23 What method will be used to convey or transfer materials to and from this installation?
24 Will such conveying devices be a part of other machines?
25 Are these machines now installed—to be installed at the same time—to be installed later?
26 What method will be used for supplying materials or conveying supplies to the machine, i.e., particular note should be made of means of conveying and storing an adequate quantity of accessory supplies such as labels, cartons, wraps, etc., adjacent to points of use.
27 Remote controls affecting particular installation or entire line of which machine is a part.

Product Limitations

28 Peculiarities of the product, i.e., variations in size or shape, density, consistency, viscosity, etc.
29 Peculiarities of the package, i.e., variations in package size that may be anticipated. Both outer size and inside volume should be considered.
30 Seasonal peculiarities affecting the above.
31 Varieties of ingredients to be handled.
32 Special requirements as to metals or other materials coming in contact with the materials which are being packaged.
33 Static or similar material handling difficulties anticipated.
34 Provision for test run in machinery manufacturer's plant using actual samples of package materials and supplies which

PLANT LAYOUT CHECKING POINTS (Continued)

will be later utilized in conjunction with the installation.

Operating Conditions

35 Make and type of motor, starter and switch required or preferred (if furnished with machine).
36 Location of all machine controls whenever position is optional.
37 Lubricating requirements and system required.
38 Nature of each changeover contemplated from product to product or package size to package size.
39 Frequency of changeover from one product to another or one size package to another.
40 Number of operators required—under various operating conditions as contemplated.
41 Training of operators required. What degree of training is necessary? How long will such training take? Who will train them?
42 Location and provision for seating of operators.
43 Color and kind of paint necessary to match general paint schemes and to withstand spilling and cleaning operations.
44 Requirements for special plating or special treatment of metal parts.
45 Provision for cleaning machines, i.e., supply machinery manufacturer with data as to special requirements for cleaning involved in reaction to a product and machine parts, hardening or gumming of products, etc.
46 Climatic conditions in locality of installation.

Time Factors

47 Desired installation date.
48 Time required to complete installation.
49 Time required to complete accessory installations and utility work necessary prior to placing machine on floor.
50 Time allowed for tune-up.
51 Time allowed for training of operators and maintenance workers.
52 Date on which production must start.

equipment, the packaging line is kept efficiently moving in one general direction. Obviously, if part of the packaging work is done manually, it is essential to provide adequate room in which the operators may work; whereas with fully automatic operations, floor space is conserved, it only being necessary to provide enough space to permit the regular inspection and adjustment of the machines whenever required.

Permanent vs. Portable Machinery

While most packaging machinery is permanently located, there are cases where it is necessary to provide for versatility and portability. Particularly is this true with manufacturers who vary their operations with the seasons, making and packaging one product during the cold months with a decidedly different one in the summer months. In this case, it necessitates having equipment which is portable, so that it is possible to set up a temporary filling, labeling or wrapping line at any convenient point, avoiding extra handling, assuring quantity production and maintaining a well-trained group of operators, who may be shifted from one job to another.

Floor areas and, to a considerable degree, wall space, should be efficiently utilized in the placement of the package production units as well as the conveying and motivating equipment, although in the case of the latter—particularly with modern machines—integral motors rather than belt drives are supplied.

The storage of materials and supplies used in the various packaging operations, which formerly—under low-speed operating conditions—was of slight importance, merits careful consideration today. Cans, bottles and other types of pre-formed containers are usually supplied direct from main storage points, being carried on individual conveyors or those which serve the dual purpose of bringing such supplies to the assembly units and removing the completed packages. In either case, it is necessary to make due allowance for such conveying systems in the planning of space and placement, obviating wherever possible any unnecessary travel or inefficient use of power. In brief, the rules which apply in any efficient manufacturing plant should be followed in the placement of packaging equipment.

Many manufacturers permit visitors to study the placement of packaging equipment in their plants. Likewise the facilities of engineering services of the various machine manufacturers can be of inestimable help in planning the placement so that there will be no delays or uncalled for extra handling and so that efficient production may be maintained to full capacity.

A new factor, affecting plant layout in recent years to a greater degree and in more and more plants, has been that introduced by the desire to accommodate visitors as a form of advertising for plant and product. The presence of untrained people, children, etc., in a plant for which proper provision for their circulation has not been made, would involve many hazards. Hence, if visitors are to be accepted, it is wise to plan in advance for them, to keep routes through the plant available and clear and to segregate these routes as much as possible from transportation, trucking and working areas.

Weighing and Filling Dry Products

The accurate weighing and filling of dry-product containers is of increasing importance to packagers in view of the more rigid standards of weight and fill being promulgated by the Food and Drug Administration and in view of other restrictions of a similar nature. The difficulties of achieving such accurate weighing and filling are further increased by the tendency—as indicated by recent administrative actions—to restrict package sizes to dimensions far closer to the volume occupied by the contents than was formerly demanded. Such restrictions reduce the orifice through which the package may be filled, make settling of material more difficult and in other ways complicate the physical problem of handling materials. Automatic machinery, however, seems fully capable of taking care of these difficulties, provided they are appreciated and anticipated.

We are particularly indebted to the following for aid and advice in the preparation of this article: A. R. Keene, Pneumatic Scale Corp. Ltd., E. G. Kuhn, Consolidated Packaging Machinery Corp., and C. E. Schaeffer, Stokes & Smith Co.

Systems of Filling

There are four basic methods of weighing and filling dry materials—accurate filling, gross weight weighing,

Cross References: The Food, Drug and Cosmetic Act, page 20; Folding and Display Cartons, page 35; Paper Bags: Types and Uses, page 204; Bag Closing and Sealing Methods, page 212; Check-Weighing Scales and Devices, page 385; Tight-Wrapping Equipment, page 434; Bag Filling and Sealing, page 444.

1. Conveyor net weight scale for free-flowing products such as crackers, cookies, etc. Weighs up to 1/2 lbs. Photo courtesy Stokes & Smith Co. **2.** Semi-automatic net weigher for free-flowing dried vegetables; pulverized, ground and bean coffee, etc. Capacity 2 to 20 oz. Photo courtesy Pneumatic Scale Corp., Ltd. **3.** Multi-station high-speed powder filler. Photo courtesy Consolidated Packaging Machinery Corp. **4.** Dual volumetric filler for insertion of two separate ingredients into a single container. Photo courtesy Triangle Package Machinery Co. **5.** Two-station bag flour filler. Bulk of load is wormed into bag at first station. Second station finishing stream fills to correct gross weight. Photo courtesy Pneumatic Scale Corp., Ltd. **6.** Semi-automatic powder filler for gross weighing, volume filling or auger packing. Photo courtesy U. S. Automatic Box Machinery Co., Inc.

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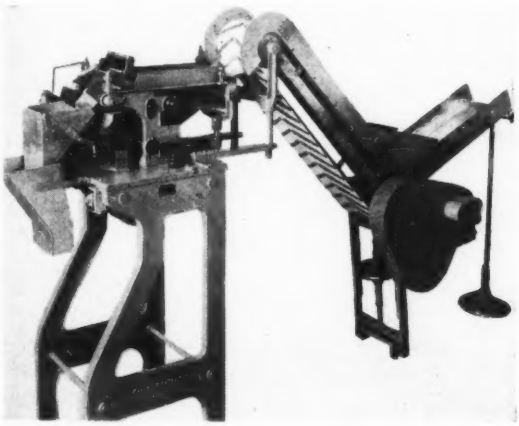

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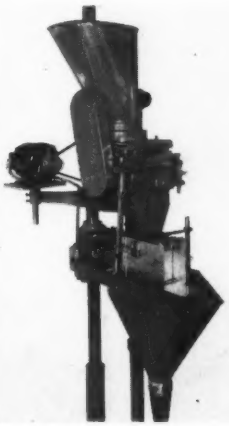

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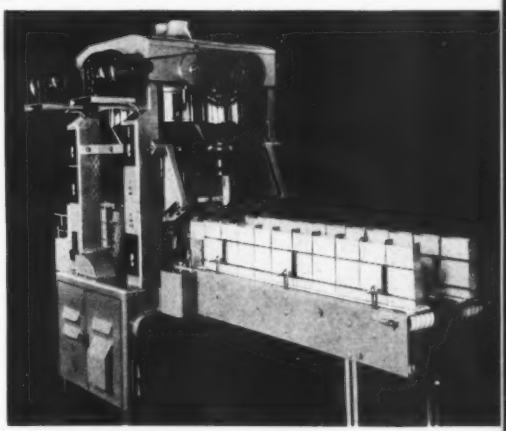

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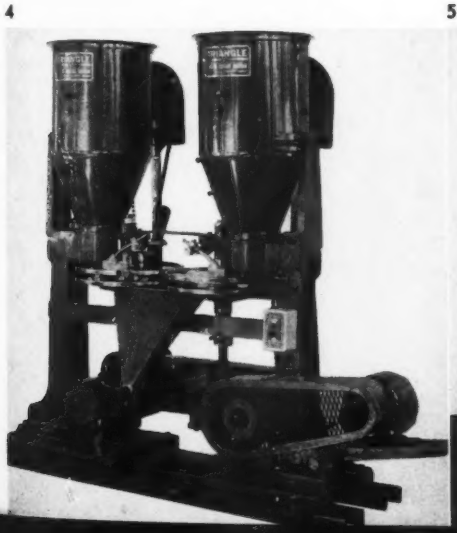

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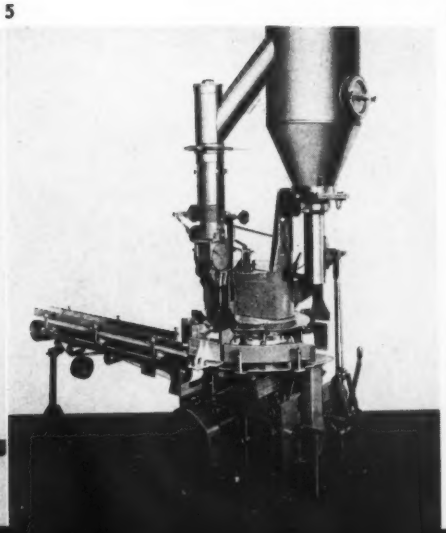

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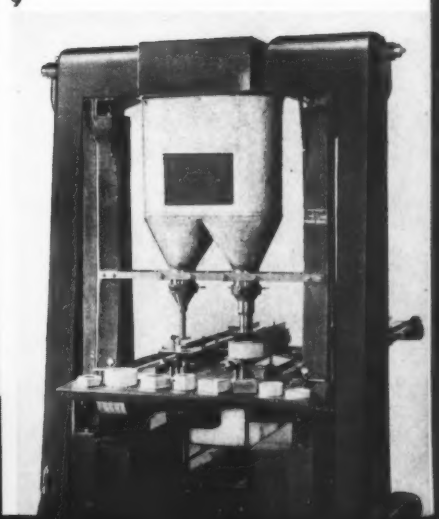

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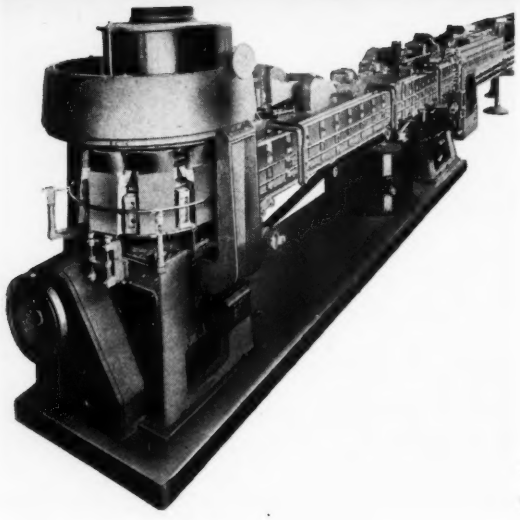

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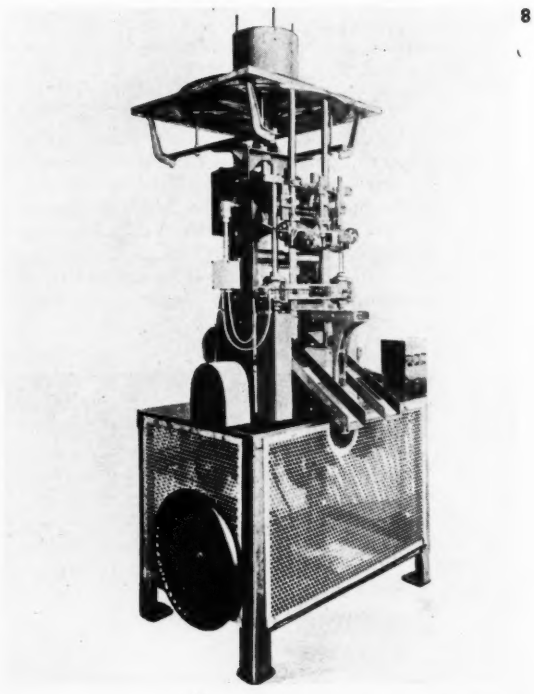

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net weight weighing and a combination of accurate filling and gross weight weighing.

Accurate filling is perhaps the simplest method. The correct quantities of the product are measured mechanically without the use of a weighing device. One way of accomplishing this is to measure by volume. Another is to use a definitely timed or regulated feeding of the material. As long as the bulk of the material remains uniform, good commercial accuracies can be guaranteed on correctly built machines of this type. If, however, the nature of the product is such that it varies in weight per unit of volume, then measuring by this method may not be sufficiently accurate for commercial requirements.

Accurate filling is successfully utilized for such products as scouring powder, jelly crystals, dessert powder, tooth powder, face powder, cut tea for tea balls and granular salts. Many machine units are available capable of handling various sizes of packages and with speeds ranging from 10 per minute to the neighborhood of 120 per minute.

Gross weight weighing involves the use of scales which weigh not just the product alone, but, rather, the package and its contents. For accuracy by this method, therefore, there must be a relatively high degree of uniformity in the weight of packages. This may be achieved through the inherent nature of the package selected or through the use of a package-sorting scale (see article on Check-Weighing Scales and Devices).

The flow of material from the feed-hopper to the package is controlled by the scale beam on one end of which the package rests during filling. Thus, when the right amount of material is dropped into the package, the scale beam trips a shut-off which stops the flow of the material instantly and passes the package ahead to the next position. To speed up production, particularly on larger sizes of packages, two scale machines are frequently utilized. The first scale fills a bulk load of from $^{2}/_{3}$ to $^{9}/_{10}$ of the total quantity to be filled. The final load, weighed to extreme accuracy, is delivered by a fine stream to the second scale.

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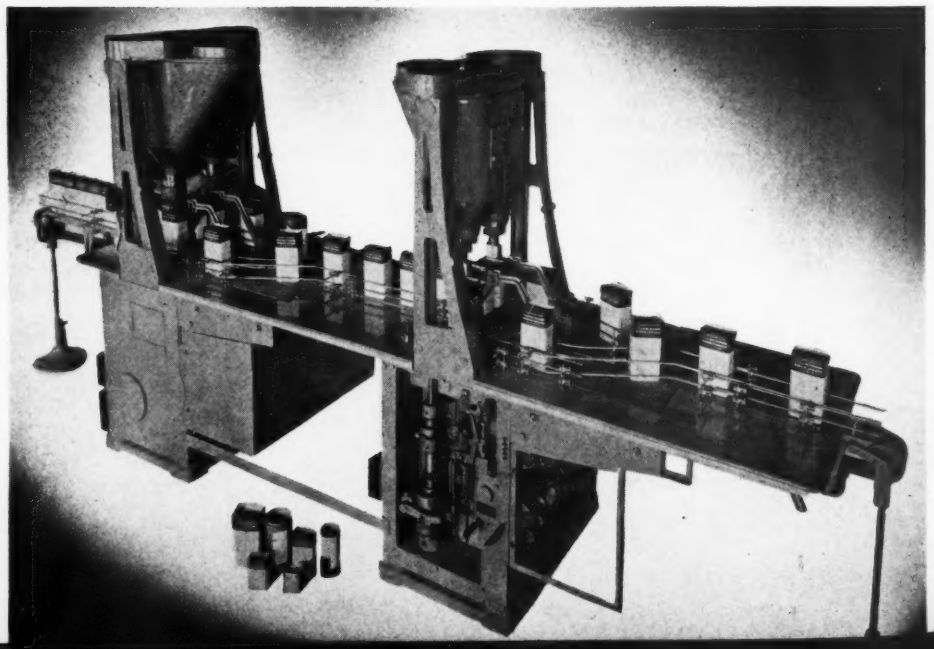

7. Automatic carton filling and sealing machine which feeds cartons from a supply hopper, seals bottoms, fills through volumetric measuring pockets and top seals the cartons. **8.** Automatic packaging machine which forms continuous tube of transparent sheet, cross seals, fills, top seals and severs sealed packet. **9.** Four-station filler. First two stations fill bulk load, later stations fill balance of load, checking by gross weight. Photos courtesy Stokes & Smith Co.

Gross weight weighing is particularly favored where accurate weighing of non-free-flowing commodities is necessary. Typical uses include powdered sugar, cocoa, malted milk, prepared flour, etc. Speeds range from 10 per minute to 70 per minute.

A combination of gross weighing and accurate filling (i.e., measuring) is sometimes used to achieve maximum speed and high accuracy. A typical instance is found in the bag-flour packer where it is further desired to achieve a tightly packed bag. The latter factor makes straight gross weighing impractical. By resorting to a worm packer for the machine's first station, the greater part of the bag's contents can be packed in tightly, at reasonable speed, without weighing. To get weight accuracy, the filling is finished off at one or two subsequent stations by directing a fine stream of material into the bag while it rests on a platform scale.

Net weight weighing is a system in which the package contents are weighed separately before being transferred to the package. A first essential for this type of weighing is that the product be free-flowing or at least semi-free-flowing. Obviously, this system cannot be utilized if the material is sticky and tends to build up and cling to the feed-hopper or funnel surfaces.

On net weight filling machines, the hopper feeds into a bin arranged on a scale platform. When the bin has received the predetermined weight, shut-off action occurs and the contents of the bin are dumped or otherwise transferred to the package.

Net weight weighing is utilized for such products as coffee, salt, tea, rolled oats, etc. Speeds range from 10 per minute to 100 per minute.

Container Selection Considerations

A wide range of container types are utilized for dry products, including folding cartons, set-up boxes, fibre canisters, metal cans, glass bottles and jars, etc. Certain basic considerations, however, affect the design of all of these if they are to be successfully and economically filled on standard types of machinery. Thus, for instance, containers with narrow neck openings, which might be suitable for liquid filling, cannot be successfully utilized for packing powders.

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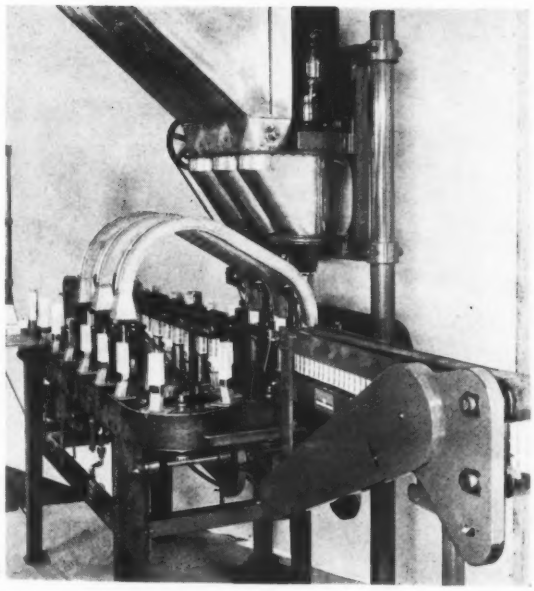

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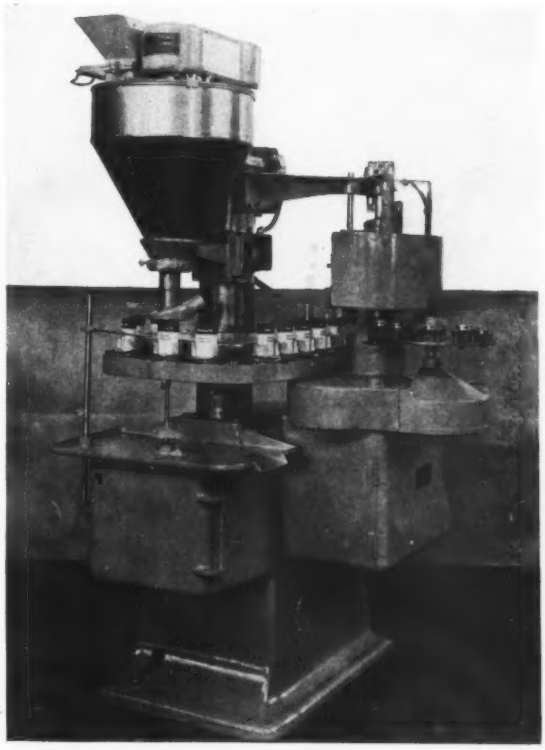

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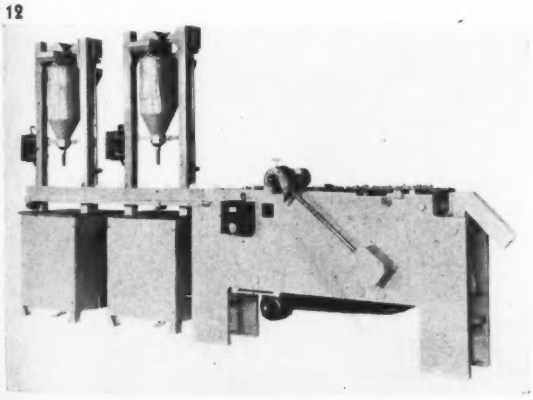

10. Carton filler for dry materials with bottom and top folding and gluing mechanisms. Photo courtesy J. L. Ferguson Co. **11.** Automatic combination filling and capping machine with lid transfer and feeding device. Photo courtesy F. J. Stokes Machine Co. **12.** Two-head envelope filling unit with sealing unit in right foreground. Photo courtesy Stokes & Smith Co.

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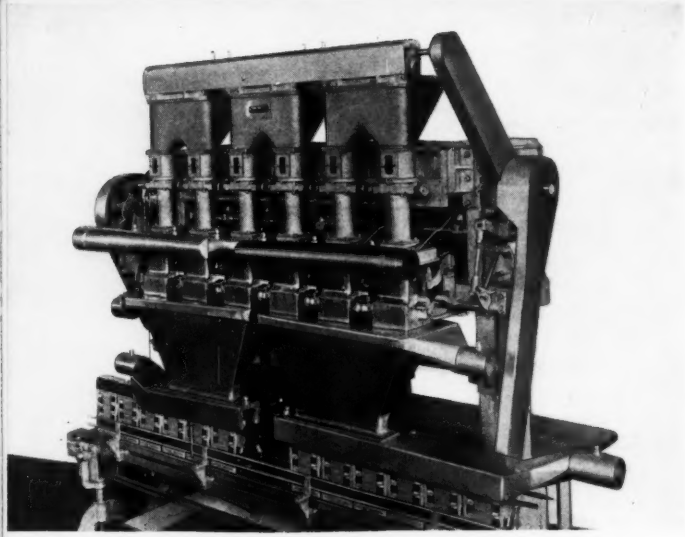

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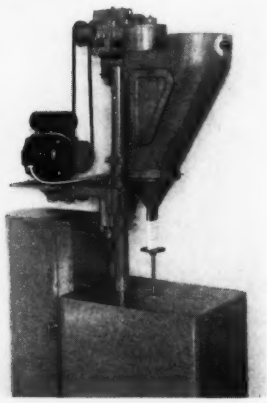

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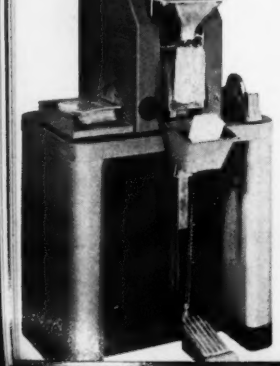

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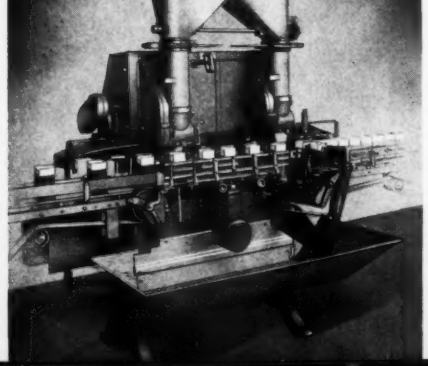

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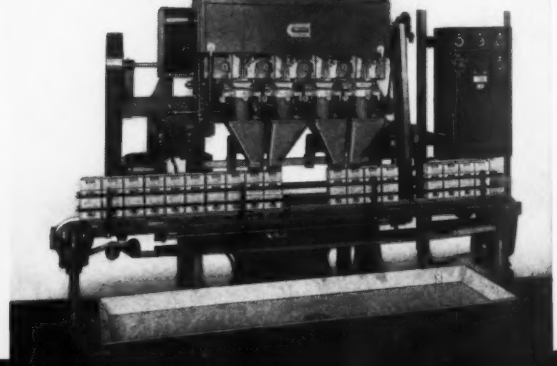

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A prime consideration in the selection of any container for powder filling involves the choice of a package with a suitably wide filling opening. Users of fibre-bodied canisters or metal cans sometimes solve this problem by filling through the open bottom end of the container and then seaming on the bottom. The limit of auger diameter is thus substantially increased and with it the potential rate of fill.

The folding carton and many types of paper bags now offered are well suited for packaging many of our widely used dry products. A number of entirely acceptable styles of each of these basic types of container are available. In either case, careful checking is suggested to accurately determine the adaptability of the product to the particular container selected. Such adaptability will concern the protection provided against leakage and contamination, the consumer's convenience and the merchandising appeal which the package provides.

Among the cartons, the sealed end type with extended flaps is extremely popular for products which are liable to sift. Bags also enjoy wide usage in this familiar field and improved standards in construction and design now definitely assure an increasing consideration of the advantages of this type of package.

The company whose requirements are not large can install an inexpensive hook-up which will help to lower packaging costs. As need demands more production, this first installation can be replaced piece-meal by more automatic and faster units. Thus an output as low as 5000 per day will justify packaging equipment of some sort being installed.

13. Six-scale net weigher for soap powders and accurate filler for reasonably free-flowing materials. Courtesy Pneumatic Scale Corp., Ltd. **14.** High-speed accurate-fill unit for non-free-flowing materials with small rigid containers. Lid pressing device appears in background. Courtesy Pneumatic Scale Corp., Ltd. **15.** Semi-automatic auger packer and filler for rigid containers. Fills to predetermined level in container. Courtesy Pneumatic Scale Corp., Ltd. **16.** Automatic bag filling scales, operating in tandem with bag closing and sealing mechanism. Courtesy Consolidated Packaging Machinery Corp. **17.** Predetermined weight filler with electrically vibrated feed plates. Scale beam controls electric shut-off mechanism. Courtesy Triangle Package Machinery Co. **18.** Two-scale gross weighing filler for free-flowing and non-free-flowing materials. Fully automatic. Courtesy Pneumatic Scale Corp., Ltd. **19.** Four-scale net weigher for macaroni, etc. equipped with vibrator feeders. Courtesy Pneumatic Scale Corp., Ltd.

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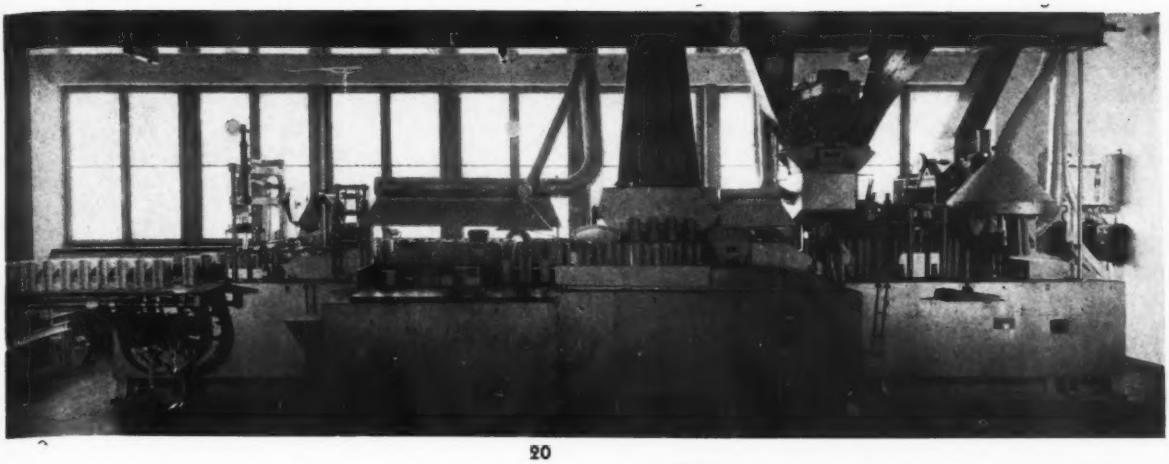

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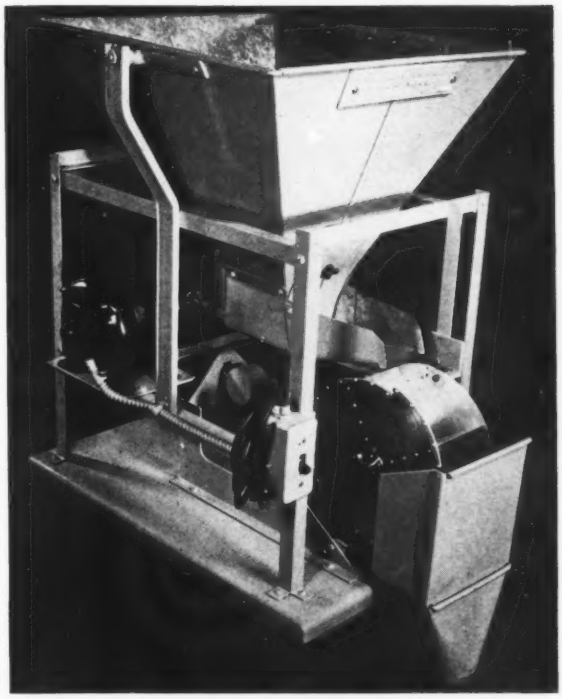
20. Gross weighing flour packer combining bulk feed and dribble feed. Machine also scores box, check-weighs, closes and seals. Courtesy Arenco Machine Co., Inc. **21.** Net weigher using vibrating feed and tripping wheel balanced on a scale. Courtesy Holm Automatic Scale & Mfg. Co. **22.** Automatic net weigher with power feed filling four packages at a time. Photo courtesy J. L. Ferguson Co.



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Basic Operations (Cartons)

With folding cartons there are certain basic operations to consider. For some carton packages all will be needed, while for others only part of these are necessary:

(1) Carton feeding and forming
(2) Bottom sealing
(3) Lining
(4) Filling or weighing
(5) Carton closing
(6) Wrapping

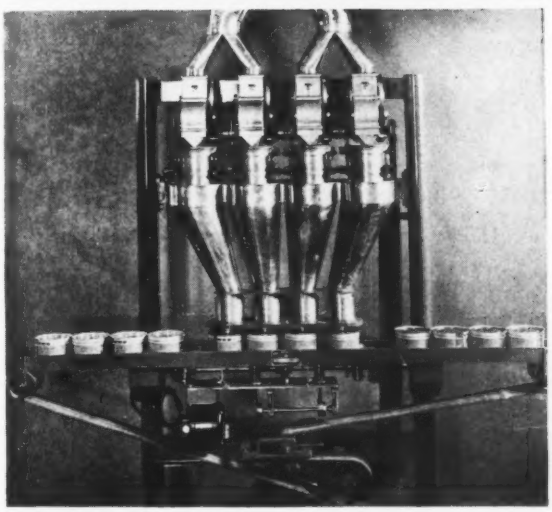
The usual practice is to handle each of these tasks on an individual unit, but in some cases it is practical to take care of several on a combination machine.

Basic Operations (Paper Bags)

With paper bags current practice embraces automatic approaches comparable to those available for use with cartons, the extent to which these mechanical approaches are utilized being optional with the customer. A typical automatic paper bag line would provide standard types of equipment available for the following operations:

(1) Feeding, opening and registering bags
(2) Weighing contents and filling bags
(3) Settling and sealing bags
(4) Nesting and packing bags in shipping containers

These functions are handled by correlated equipment designed with a particular view toward making progressive approaches from minimum to full mechanization completely practical. Photographs show typical installation and some of the more widely used equipment for paper bag handling.



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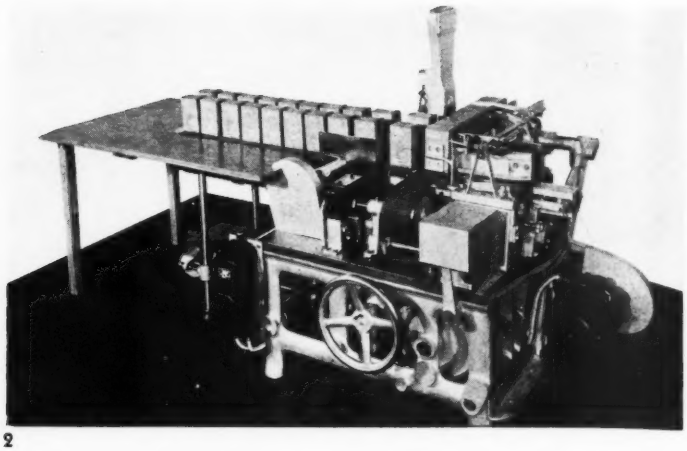

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1. Predetermined weight scale for packaging dusty or granular materials. Grid platform permits surplus material to drop through. Conical cover prevents material from settling on weight platter. Capacity 30 lbs. Courtesy Toledo Scale Co. **2.** Automatic check-weigher designed for inclusion in packaging line. Machine pushes out over-weight and under-weight packages. Correctly weighed containers proceed along belt. Courtesy Arenco Machine Co., Inc.

Check-Weighing Scales and Devices

A wide variety of devices have been developed to permit packagers to check and control the accuracy of fill of containers. These fall into three general groups: (1) check-weighing scales, (2) automatic weight-sorting equipment and (3) volume outage detectors.

Check-Weighing Scales

For smaller packages ranging from a fraction of an ounce up to 100 lbs., the balance type of scale is most commonly used for check-weighing. The development of an over-and-under weight indicator has made the balance type of scale especially well adapted for production and check-weighing of packages up to 100 lbs. This type of scale can be built to a high degree of sensitivity, is not seriously affected by machinery vibration and weighs correctly in any normal out-of-level position. The visible indication magnifies weight errors and makes it possible for any class of labor to give accurate weights. The scale is simple in structure, does not require a great deal of service and simplifies the process of weighing and of supervision.

There are a number of different models and types of over-and-under weight balances designed and constructed to take care of various commodities and packaging operations. For floor or low bench operations, a top reading dial can be provided. In some scales, the tower is inclined, thus setting the dial at the normal reading angle and relieving strain on the operator. In other types, the position of the indicator is so arranged as to greatly increase the speed of the scale. For unusual corrosive or acid conditions, special finishes are provided which lengthen the life of the scale.

In all of these various types, the scale dial shows the zero reading, which indicates the exact weight point. The dial may also be provided with weight graduations or tolerance marks. Where graduations are used, the operator or inspector is able to determine the amount of weight error in the package, thus affording a guide in adjusting the filling equipment. If the scale is used for checking different commodities, the dial may be equipped with adjustable mechanical tolerance markers.

It is important, in selecting scales, that these be of the proper capacity for the job at hand. For instance, a scale which is built with sufficient sensitivity for weighing 10-lb. packages would not have the necessary sensitivity for 1-oz. or 4-oz. packages.

For check-weighing larger packages, some type of beam scale or a dial scale is generally used. A recent development, which tends to make the beam scale well adapted as a packaging scale, is that of an over-and-under weight indicator. This serves the same purpose to the beam scale as the over-and-under weight dial does to the balance scale.

In hand filling, it is of course essential that all packages be weighed. Automatic weighing fillers are subject

Acknowledgment is made to K. B. Neff, Exact Weight Scale Co., and C. E. Schaeffer Stokes & Smith Co., for aid in the preparation of data for this article.

Cross References: The Food, Drug and Cosmetic Act, page 20 and Bag Filling and Sealing, page 444.

to occasional variations for reasons which are difficult to control. Periodic check-weighing (every 10th or 100th package, as need indicates) is, therefore, usually resorted to as a check of the continuing accuracy of fill. Volumetric fillers require check-weighing not merely as a check on the machine, but because of variations in the density or rate of flow of the material being filled.

Automatic Weight-Sorting Equipment

Where need requires, it is sometimes found desirable to utilize automatic equipment to sort packages by weight.

One type which has achieved fairly wide usage is set into the conveyor line so that packages are passed over a weighing pan. Each package is momentarily lifted from the conveyor chains for weighing. On the opposite end of the scale beam, a pan carries a standard weight container against which each successively produced package is to be tested. Containers which balance or over-balance the standard container are redeposited upon the chain and carry straight along the conveyor line without interruption. Containers of insufficient weight to balance the standard are automatically shoved off the conveyor by a pusher bar. This unit is so designed as to permit of either continuous or intermittent use. It may be thrown in or out of operation by a clutch handle.

Another type of sorting scale is used to examine packages prior to filling rather than filled containers. Since the weighing of a filled container gives only a check on the total weight, it is sometimes desirable—and even efficient—that the weight of the container itself be predetermined, since variation from the norm on the part of the container will introduce an opposite variation in the quantity of product required to bring the filled package up to the predetermined weight.

Articles to be check-weighed are fed to the scale which pushes aside the under-weights or the over-weights to pass onto the filling machines. Since light packages are separated from heavy containers, it is possible, at a later time, to reset the scale, make compensating adjustments on the filling machines and thus to utilize both the light and heavy containers if these occur in appreciable quantities.

Volume Outage Detectors

Perhaps the simplest of checking devices—in principle, if not necessarily in construction—are the so-called outage detectors which are used to determine the level of fill of dry product cartons. These are of various types—straight line and rotary—all using the principle of the mechanical finger which is inserted into each package. Should the finger find itself able to descend further into the body of the package than a correct fill would permit, a mechanism is set in motion which throws the package off the line. Straight-line detectors are located at the delivery end of high-speed weighing machines and check packages as they leave these units. One type automatically stops the weighing machine if packages pass through which are not filled to the correct height. The machine operators then carefully examine the weighing unit and the trouble is located on the particular scale where the error has occurred.

Another straight line type utilizes a circular disc, set vertically above the packages on the conveyor line, with a series of pendulums or hanging members. This is set so that if the material is up to the desired height in the carton, a hanging member comes to rest on the top of the material and is pushed up slightly as the disc moves down. If, however, the material is below the desired height in the container, contact will not be made with the hanging member. Failure to make this contact permits a throw-out switch to operate, causing a pusher device to throw the faulty package out of the line.

3. Predetermined weight scale. Indicator controlled by hydraulic shock absorber. Beam notched at each graduation for speedy poise setting. Courtesy Toledo Scale Co. **4.** Check-weighing scale utilizing illuminated frosted glass chart, suitably graduated, instead of mechanical indication. Courtesy The Exact Weight Scale Co.

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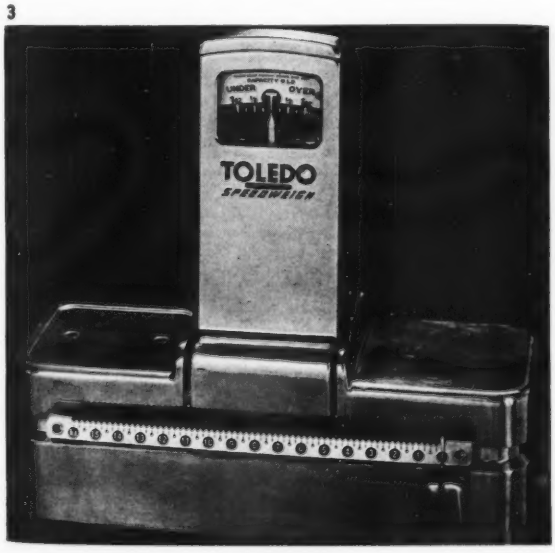
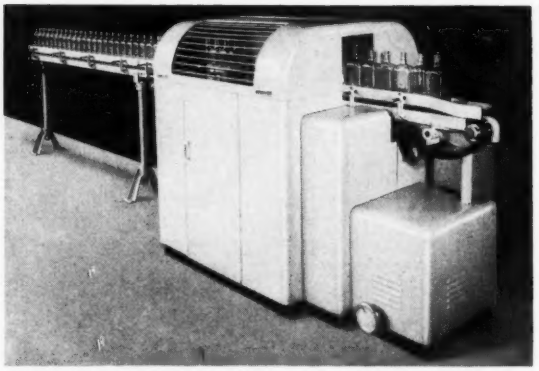


4

Bottle Cleaning Equipment

To prevent contamination of their products and to comply with pure food and with health laws, many manufacturers find it necessary to clean bottles prior to use. Those using all new containers desire to remove lint, dust and any glass chips that may enter the container between the time of its manufacture and the time of its use in the packaging plant. Those using a returned bottle—as in the milk and beverage industries—of course find thorough washing and sterilizing of such containers an absolute essential. Cleaning equipment is of three general types: air cleaners, rinsing machines and soaking, rinsing and washing machines.

The two former types are recommended only for the thorough cleaning of new glassware not requiring sterilization at the point of filling. When second-hand or returned bottles are being used, only a thorough soaking and washing in sterilizing solutions, followed by a careful drying, can be recommended.



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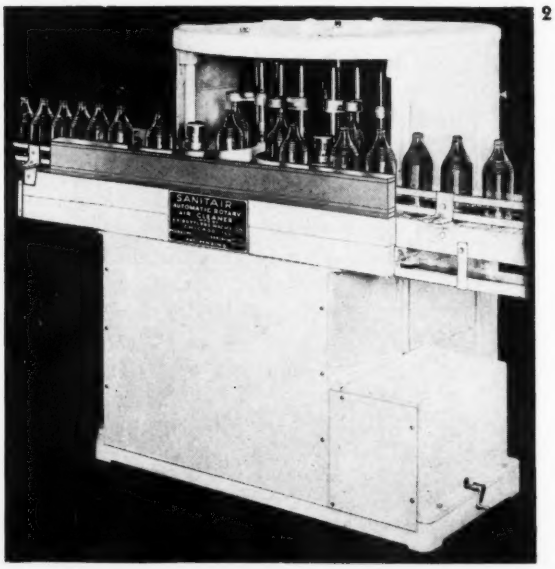

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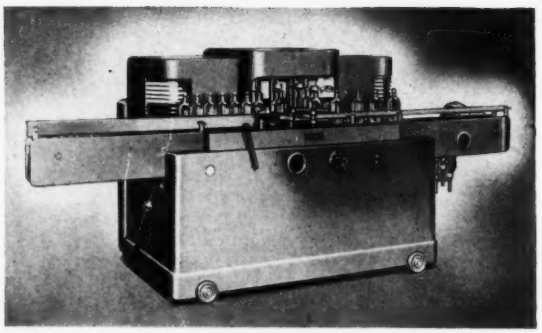

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Air Cleaning

Where glassware comes directly from the factory, cleaning by compressed air has been found satisfactory in numerous plants, particularly provided the glassware has not been exposed—outside of closed shipping containers—to grime or grease.

Air cleaners of both hand operated and automatic types are available. In the non-automatic type, the operator places two bottles at a time against air tubes, so arranged as to provide a blast of air whenever the pressure of the bottle necks is applied. From 60 to 80 lbs. of compressed air pressure is utilized and dirt, lint and grease are thus literally blown out of the bottle. Such machines can be operated at a speed of from 30 to 40 containers per minute, depending on the skill of the operator and the size of the container.

Automatic machines of various types are also available. In some instances, rotary machines very similar to bottle filling machines are utilized, receiving the bottles directly from a conveyor and cleaning them while

Cross References: Glass Bottles and Jars, page 256; Hand Made Glass Bottles, page 261; General Considerations in Machine Installation, page 378; Filling Liquids and Pastes, page 396; Package Conveying Equipment, page 452.

1. Fully automatic straight line air cleaner. Bottles are inverted six at a time over cleaning heads. Courtesy Pneumatic Scale Corp., Ltd. **2.** Automatic rotary air cleaner. Courtesy U. S. Bottlers Machinery Co. **3.** Automatic rotary bottle cleaner. Containers are inverted over air blast mechanism. Photo courtesy The Karl Kiefer Machine Co.

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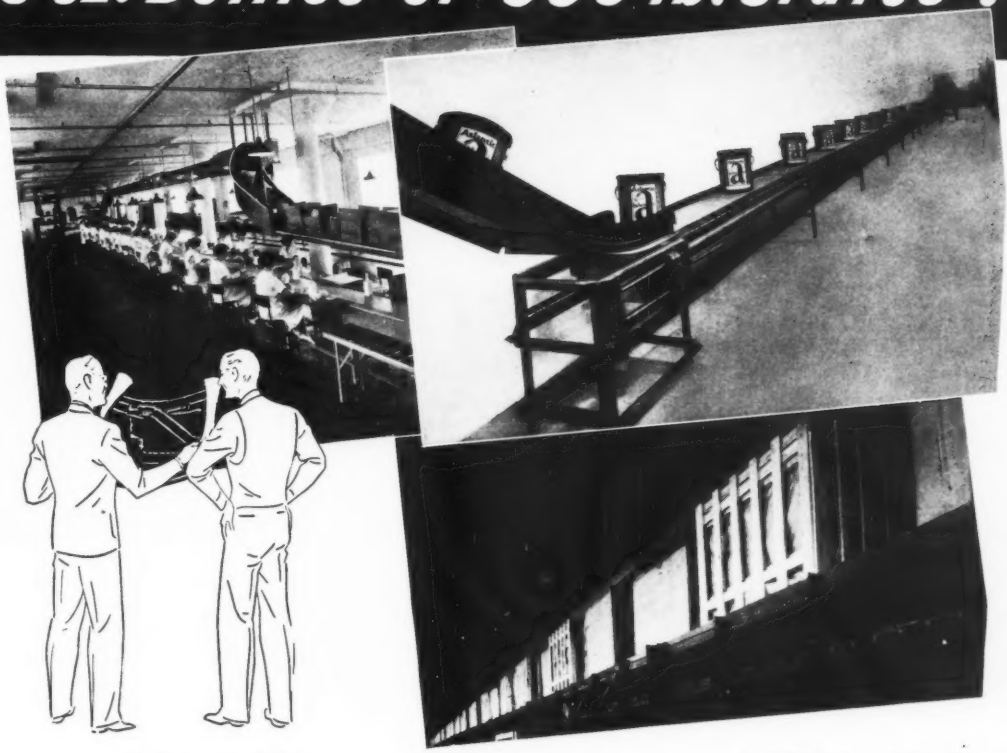
WHAT'S *YOUR* HANDLING PROBLEM
16 oz. Bottles or 600 lb. Crates ?

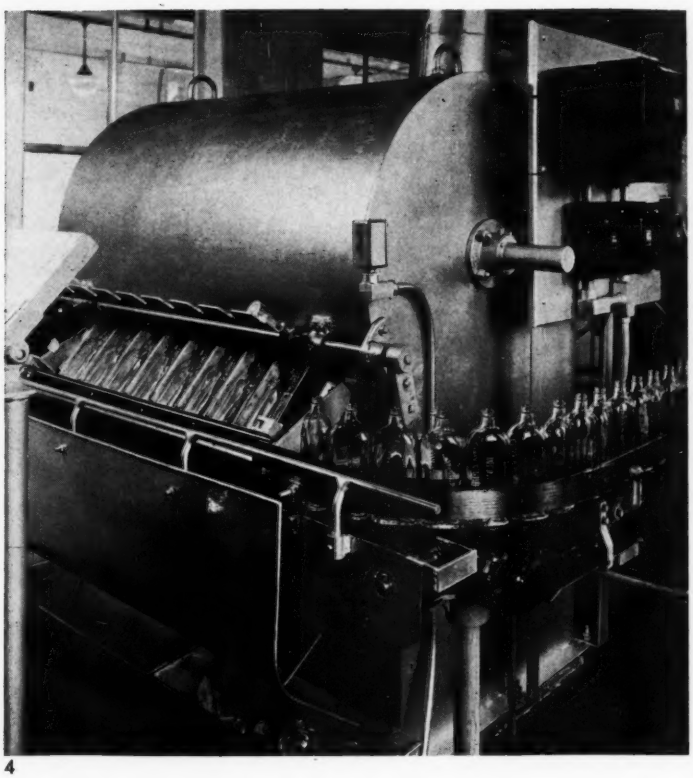


Alvey-Ferguson Conveyors Will Help You Increase Profits and Reduce Costs

● PEPSODENT, Campana, National Distillers and Frigidaire are but four of the many companies which have come to The Alvey-Ferguson Company for "Scientifically Planned Conveyors." Faster production, better working conditions, lower costs and increased profits have been the result of many a consultation with our well-qualified engineers. Whatever your product-handling problem—large or small—we will be glad to help you solve it! Write us today. The Alvey-Ferguson Co., 51 Disney Street, Cincinnati, Ohio.

CONVEYING A-F MACHINERY

ALVEY-FERGUSON
SCIENTIFICALLY PLANNED *Conveyors*



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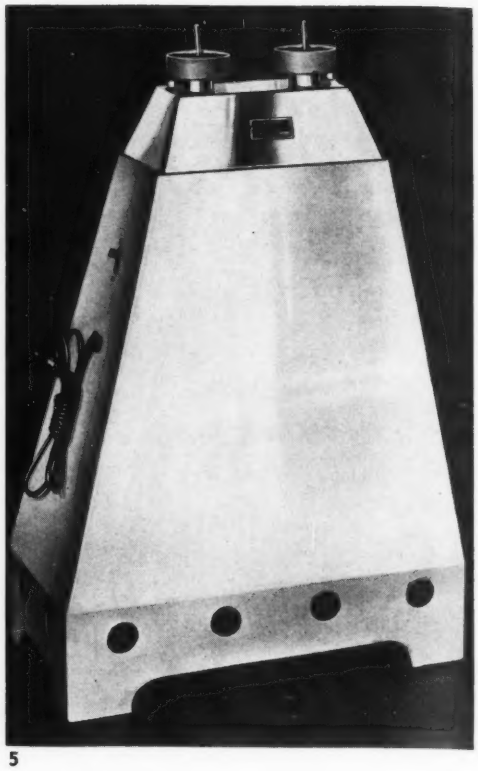

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in upright position. They are discharged, one by one, back onto the conveyor, by means of a star wheel.

Another type of machine receives a group of bottles from the conveyor onto a barrel-like holding device and then proceeds to invert these bottles over air nozzles. Cleaning is thus accomplished while the bottles are held in inverted position. While one set of bottles is being cleaned, the preceding set, at the opposite side of the drum, is being returned to the conveyor and a third set being received, immediately thereafter, by the drum.

Air cleaning equipment is sometimes incorporated as an integral part of a bottle filling machine.

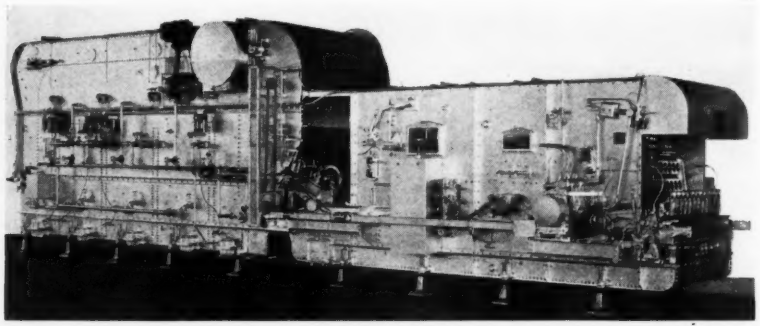
Bottle Rinsers

Bottle rinsers utilize a spray of water—sometimes heated and sometimes including sterilizing solutions, to rinse both the inside and the outside of inverted containers. Some, of the rotary table type, consist of a large number of spouts mounted on a rotary table. The operators invert bottles over these spouts which then pass under a hood where interior and exterior sprays are applied. Machines of essentially similar principle are also manufactured using a straight line conveyor or a chain conveyor, designed to carry one or more rows of bottles through a rinsing hood where both interior and exterior rinsing is performed.

Soaking and Washing Machines

Soaking and washing machines were designed to meet the far more complicated cleaning problems in-

6



4. Discharge section of two-story bottle washer and sterilizer. Courtesy Rice & Adams Corp. **5.** Two-tube air cleaner with compressor pump and motor integral with base. Operator inverts bottles over air blast heads. Courtesy U. S. Bottlers Machinery Co. **6.** Milk bottle washer typical of large equipment used for handling multi-trip bottles. Containers are carried on continuous conveyor through soaking pits, past washing sprays, brushes and cooling sprays. Courtesy Michael Yundt Co.

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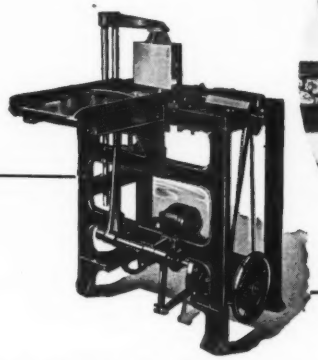
It's PETERS

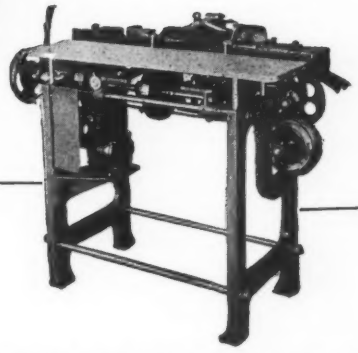
CARTON PACKAGING MACHINES

. . . for *Economical* Packaging

If you are using die cut cartons as shown and setting them up or closing them by hand, you can considerably reduce your packaging cost with these machines.

Type of die cut cartons handled on this equipment





This PETERS JUNIOR CARTON FORMING AND LINING MACHINE sets up 35–40 cartons per minute, requiring only one operator. After the cartons are set up, they drop onto a conveyor where they are carried to be filled. If several sizes are desired to be handled, machine can be made adjustable.

This PETERS JUNIOR CARTON FOLDING AND CLOSING MACHINE closes 35–40 cartons per minute, requiring no operator. After the cartons are filled, they enter machine on conveyor and are automatically closed. Can also be made adjustable to handle several different size cartons.

ALSO AVAILABLE: SENIOR Model Carton Packaging Machines to operate at speeds up to 60 per minute . . . PETERS CELLOPHANE SHEETING AND STACKING MACHINE for cutting cellophane from rolls into sheets.

Send a sample of each size carton you are interested in handling and we will be pleased to recommend machines to meet your specific requirements.

PETERS MACHINERY CO.
4700 Ravenswood Avenue, Chicago, Illinois

Canadian Representative: Delamere & Williams, Ltd., W. Toronto, Canada

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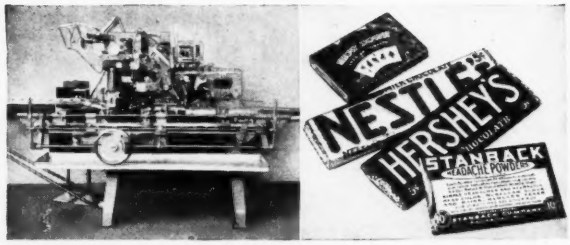
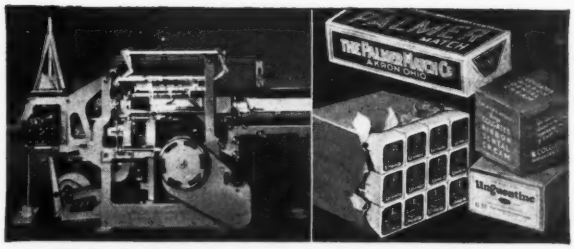
America's leading

Model FA—An extremely versatile machine that wraps cartons, extension-edge boxes, turned-up-side trays and open boats in a wide range of sizes. May be adjusted for a different sized package in less than 10 minutes. May be equipped to use any type of wrapping material. Electric Eye registers printed, roll-fed material.

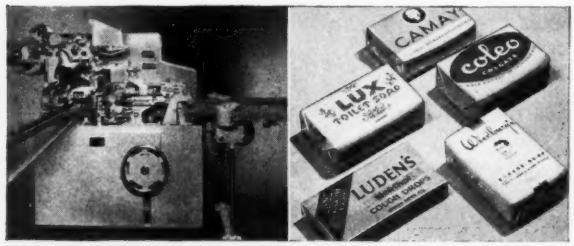
Model CM-2—New high-speed machine to wrap comparatively small packages. Speeds as high as 380 per minute are possible, depending on the size and nature of the package. Quickly adjustable for various sizes. Uses transparent cellulose.



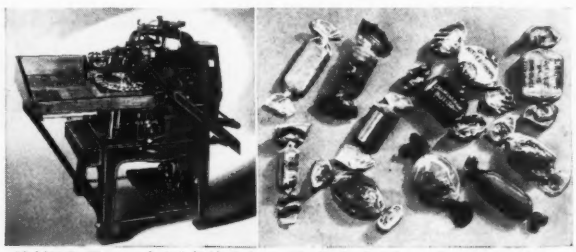
Model CA-2—Wraps chocolate bars and other products. Handles a wide range of sizes. Permits many styles of wrapping. Uses various types of wrapping material either singly or in combination. Printed material fed from a roll is registered accurately by Electric Eye. The machine applies an easy-opening tape, if desired.



Model F Bundlers—Bundle packages in lots of from 2 to 24 depending on the size of the packages. Eliminate expense of packing in costly cardboard boxes. Register printed panels accurately. Also attach end-seals. Some types may be adjusted for bundling cartons of different sizes.



Model S-2—Used by more soap manufacturers than any other wrapping machine. Speed up to 200 per minute. Handles many styles of wrapping. Adjustable for different sizes. Inserts cardboard or circular, if desired. Wraps other types of packages.



Model 22-B—Wraps candy in individual pieces. Handles hard candy or soft-center pieces in many sizes, odd and fancy shapes. Does combination type wrapping (for example, inner wrapper of foil, outer wrapper of transparent cellulose).

products

go to market in packages wrapped by our machines

Every year has seen an increase in the number and variety of goods wrapped by our machines. This steady growth finds us today with the largest and most complete line of wrapping machinery built by any single organization. Shown here are but a few of our more than 70 different models.

In addition to various models designed for wrapping cartons, we have special machines for wrapping such products as chewing gum, razor blades, candy bars, yeast cakes, small pieces of candy, lump sugar, etc.

Many of our machines make not only a single wrap, but are capable of producing combination type wrappers of different materials and of incorporating an easy-opening device in the wrapping.

Widely Adaptable—and Adjustable for Various Sizes

Most of our models are adaptable to many different forms of wrapping. This means that we are usually in a position to fill an individual manufacturer's requirements perfectly without costly redesigning.

Practically all of our models are quickly adjustable for a variety of sizes and may be equipped to use any type of wrapping material. The FA shown on the opposite page, for example, can be changed for a different sized carton in less than 10 minutes.

High Speed

Our machines are built to run at the highest speed, consistent with good wrapping and the life of the machine. Our chewing-gum machine, for example, turns out packages at the rate of 600 sticks per minute. The small-carton wrapping machine (CM-2) on the opposite page has a top speed of 380 packages per minute.

Built to Last

Built of the most durable materials by skilled craftsmen especially trained to produce work of fine precision, our machines give dependable service for many years. Many models over 20 years old are still in use.

Package Improvement Lower Costs

A study of your package, your production methods and machinery may enable us to suggest important savings or improvements that will give your product new sales appeal.

Consult our PACKAGING CLINIC for free assistance on your packaging problems.

PACKAGE MACHINERY COMPANY, Springfield, Mass.
NEW YORK CHICAGO CLEVELAND LOS ANGELES TORONTO

Mexico, D.F.: Agencia Comercial Anahuac, Apartado 2303 Peterborough, England: Baker Perkins, Ltd.
Buenos Aires, Argentina: David H. Orton, Maipu 231 Melbourne, Australia: Baker Perkins, Pty., Ltd.

PACKAGE MACHINERY COMPANY
Over a Quarter Billion Packages per day are wrapped on our Machines

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volved in the use of multi-trip containers. Such containers frequently require the removal of an old, stained or torn label. They have often been used—while in the field—to hold products ranging from kerosene to fats. They have had opportunity to collect every sort of contamination—germs, dirt, grease and grime—and thus require the most effective form of thorough cleansing and sterilization.

Machines of this sort usually first rinse the bottle to flush out loose dirt, flies, etc. and to pre-heat the bottles for the high temperature solutions in the following processes. Soaking in hot alkali solutions then follows, to effectively remove labels, adhesives and all forms of dirt deposits. Frequently brushing devices for both interior and exterior of bottles are included as an integral part of the machine. The final step consists of rinsing of both interior and exterior, to remove all cleaning solutions and then draining and, in some instances, drying.

Machines vary in size to meet varying production needs and use chain belts equipped to hold anywhere from one to twelve or more bottles per link. Feed and discharge may be automatic and directly off a conveyor, semi-automatic by means of a magazine feed or hand fed in some instances.

Production speeds vary with the width of the machine, i.e., the number of bottles held per link of chain or belt, and with the size and type of container. Thus an essentially identical machine designed with a four-bottle-wide belt will have a capacity of from 24 to 32 bottles per minute, whereas an eight-bottle-wide belt will have a capacity of from 48 to 64 bottles per minute.

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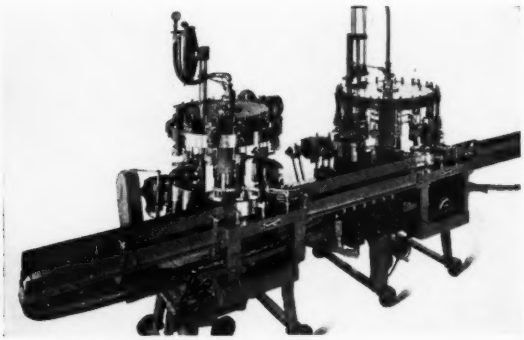

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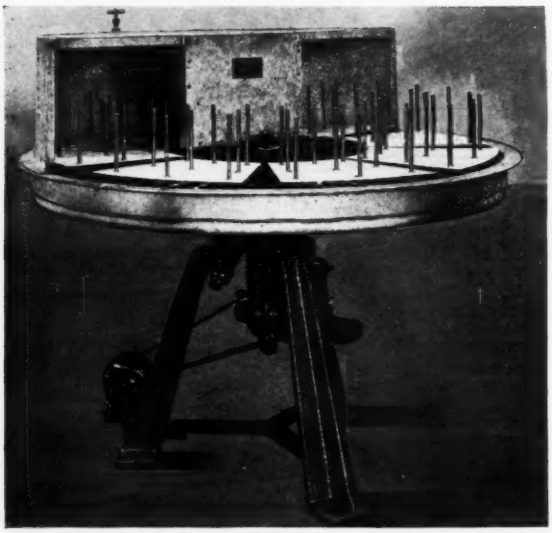


7. Rotary air cleaner used in conjunction with rotary vacuum bottle filler. Courtesy The Karl Kiefer Machine Co. **8.** Rotary bottle washing table. Bottles are placed on table and removed by hand. Courtesy F. J. Stokes Machine Co. **9.** Bottle rinsing, washing and drying machine. Note trays permitting use for wide range of bottle sizes. Courtesy U. S. Bottlers Machinery Co.

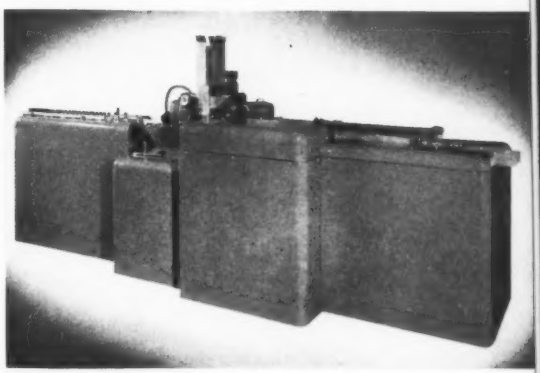
9

Redington Packaging Machines

have a 44-year record of packaging jobs well done for practically every type of product

CARTONING MACHINES

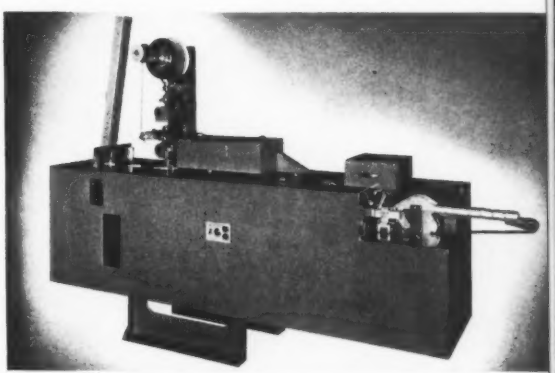
● *Consult Redington* for automatic cartoning of practically any solid item. Machines are available for inserting bottles, jars, collapsible tubes, razor blades, candy coated gum, oleomargarine, macaroni, soap and *almost any other* solid item or container in glued-end or tuck-end cartons. *Redington* Cartoning Machines can be equipped with circular mechanism for automatically handling printed advertising matter—means for code stamping carton—means for printing on cartons—mechanism for other features such as placing a corrugated protector around bottles.



Type 23 Continuous Loading Cartoning Machine for handling Fitch's Ideal Hair Tonic. Same type machine built for items shown at the left, as well as for many other products.

WRAPPING and CELLOPHANE WRAPPING

● *Consult Redington* for high speed wrapping machines for handling products in Cellophane, Sylphrap, wax or glassine paper and *other wrapping materials.* Redington Wrapping Machines can be equipped with mechanism for applying "Easy Opening Tape"—with photoelectric cell mechanism for controlling cut-off of printed design—with special mechanism for handling government stamps for tobacco packages, and with many other special mechanisms.



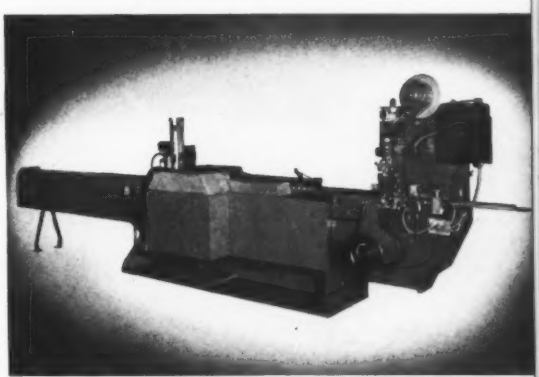
Type 96 high speed Cellophane Wrapping Machine with means for applying Easy Opening Tape. Machine shown was built for wrapping cigarette packages. Available for high speed wrapping of similar items.

Combination CARTONING and WRAPPING

● *Consult Redington* for machines for such items as the new Schick Injector package, candy coated gum and other packages where it is advisable to carton and wrap on the *same* machine. Photoelectric cell mechanism for registering printed wrapping material, and easy opening tape mechanism are available.

SPECIAL PACKAGING

● *Consult Redington* for packaging machines that defy classification . . . the unique wrap of Listerine, the double wrap for Crystal White Soap, the interlocking wrap for tins of Underwood's Deviled Ham, the Phillips Milk of Magnesia package, Bayer's tins of Aspirin, Life Savers, professional and sample envelopes for Bayer's Aspirin and Grove's Laxative Bromo Quinine.



Type 23 Continuous Loading Cartoning Machine combined with Cellophane Wrapping attachment. This combination unit not only inserts article into carton but also wraps closed carton in Cellophane.

F. B. REDINGTON CO. (Established in 1897) 108 So. Sangamon St., CHICAGO, ILL.

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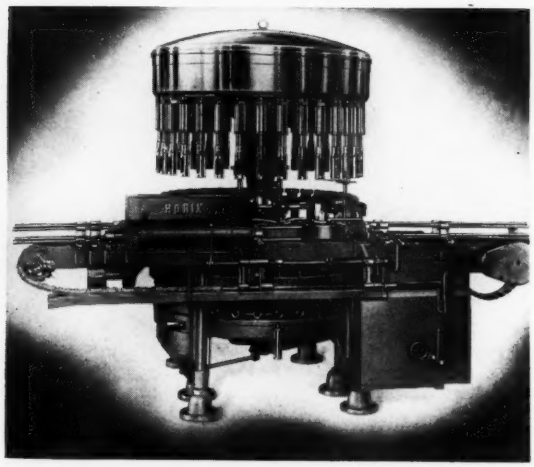
Filling Liquids and Pastes



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2

Equipment for filling containers with liquids can be divided into two general classifications:

1. Metering machines—which deliver to the container:
   (a) A measured volume.
   (b) A measured weight.
2. Constant level machines—which fill the containers to a uniform height as measured from:
   (a) The bottom of the container to the liquid level.
   (b) The top of the container to the liquid level.

Metering machines are used principally for viscous or semi-liquid products. The constant volume type

Acknowledgment is made to P. R. Fechheimer of The Karl Kiefer Machine Co. for aid in the preparation of this article.

Cross References: Tin Packages and Cans, page 232; Glass Bottles and Jars, page 256; General Considerations in Machine Installation, page 378; Weighing and Filling Dry Products, page 381; Collapsible Tube Filling, page 440.

1. Thirty-two valve automatic feed and discharge rotary filler Courtesy Horix Mfg. Co. **2.** Straight line semi-automatic vacuum filler. Courtesy U. S. Bottlers Machinery Co. **3.** General purpose filler for thick liquids and pastes. Courtesy F. J. Stokes Machine Co. **4.** Auger fed filler for pastes and viscous materials. Container capacity up to 18 in. in height. Courtesy Stokes & Smith Co. **5.** Automatic vacuum filler for bottles and cans equipped with variable speed drive to permit adjustment to speeds of other machines in the line. Courtesy Pneumatic Scale Corp., Ltd.

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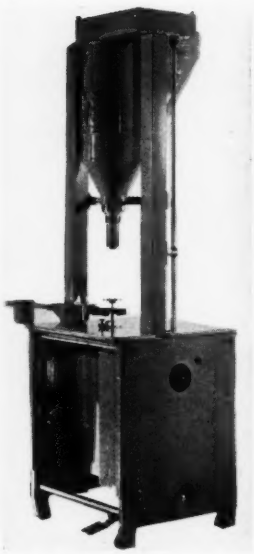

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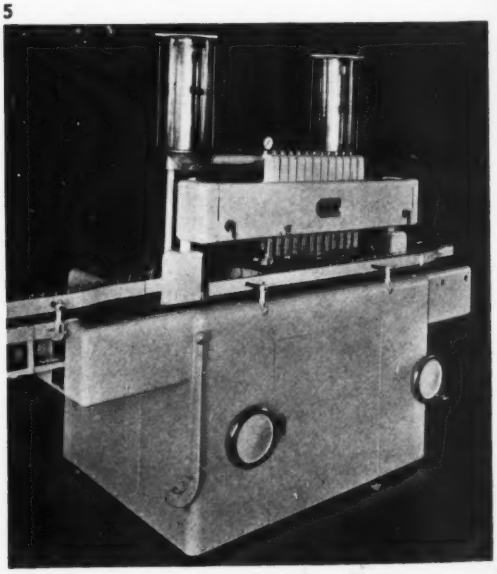

You'll find this STANDARD-KNAPP Case Sealer

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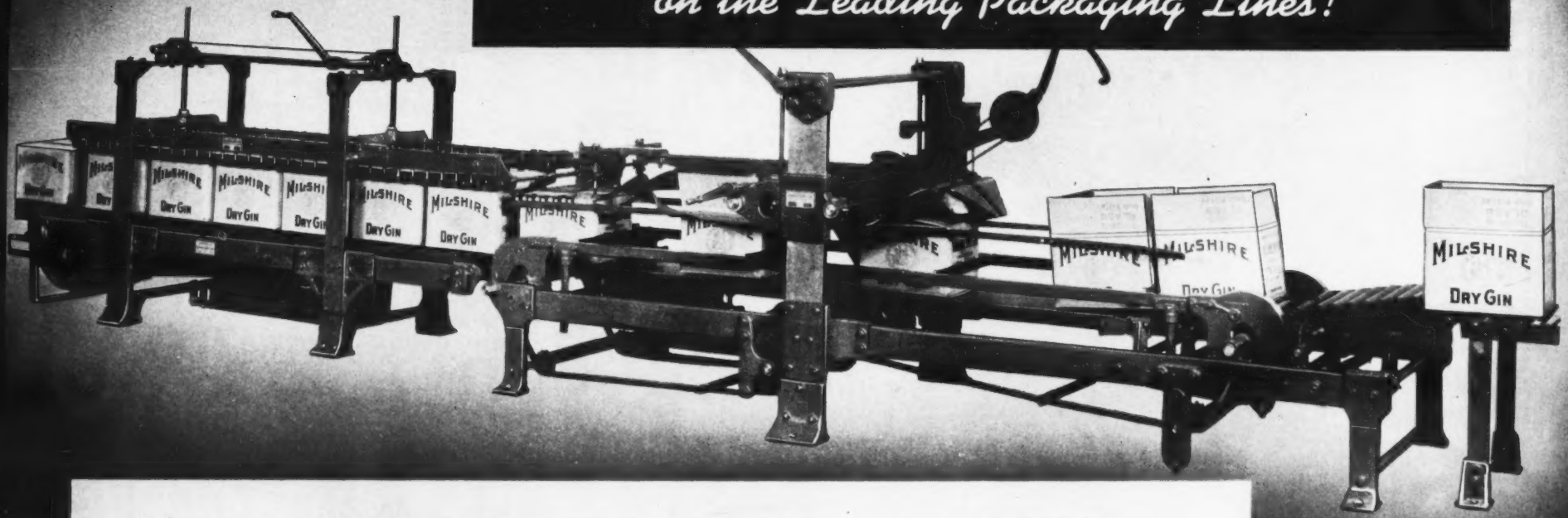
You'll find this STANDARD-KNAPP *Case Sealer on the Leading Packaging Lines!*



Because of economy, speed and efficiency, the leading packagers in over a hundred industries choose Standard-Knapp Case Sealers like the machine shown.

We manufacture Can and Bottle Labeling Machines; Can and Bottle Packaging Machines; and special packaging machinery of all kinds — and all with the same quality and operating characteristics as the machine shown.

Write or 'phone for further information, without obligation.

STANDARD-KNAPP CORPORATION

MANUFACTURERS OF CASE SEALING, CASE PACKAGING, AND CAN LABELING MACHINES

FACTORY and GENERAL OFFICES PORTLAND, CONNECTICUT

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NEW YORK, N. Y.

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CLEVELAND

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SEATTLE

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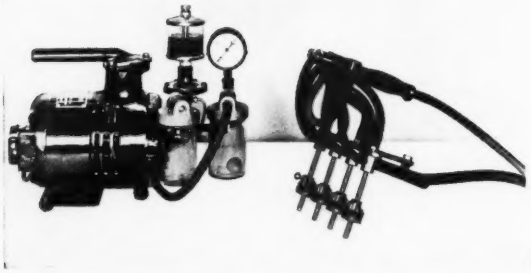
Paul Brown Building
ST. LOUIS, MISSOURI

Windsor House, Victoria Street, LONDON, ENGLAND



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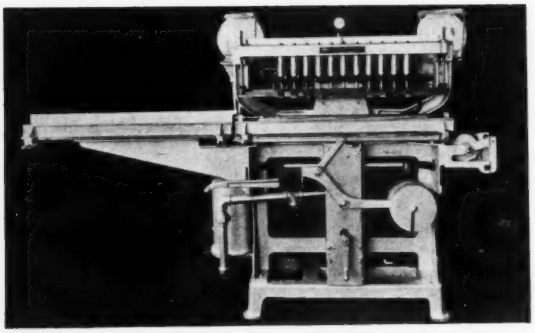

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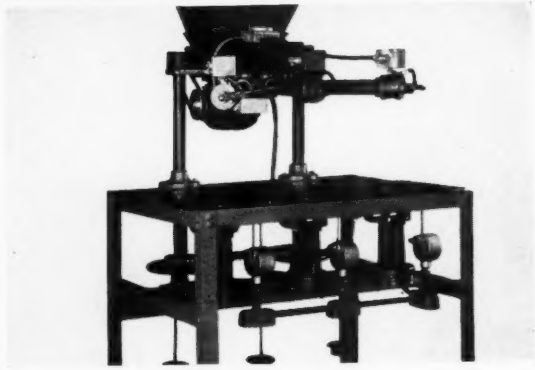

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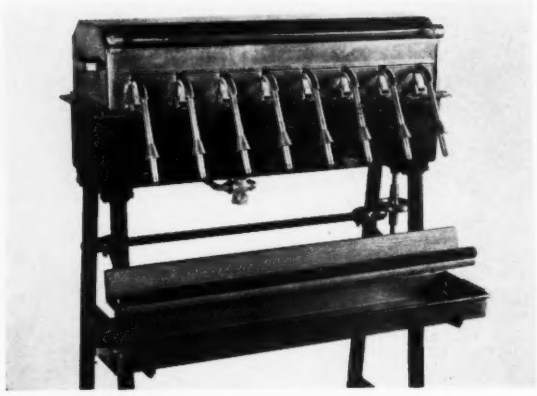

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6. Portable vacuum type filler equipped with four valve filling heads. Courtesy Horix Mfg. Co. **7.** Semi-automatic vacuum filler for bottles and cans. Courtesy Pneumatic Scale Corp., Ltd. **8.** Multi-head paste filler for hot and cold semi-plastic products. Courtesy The Vol-U-Meter Co. **9.** Gravity filler with eight filling spouts. Courtesy Scientific Filter Co.

consists basically of an accurate pump of either piston or rotary impellers and is obtainable as hand operated, semi-automatic or full automatic equipment.

The hand operated units are generally constructed with a piston pump, a hopper in which is loaded a batch of the material to be filled and a spout to which the operator presents the containers in time with the stroke of the piston. On some products, it is necessary to keep the tip of the spout immersed in the fluid as it is ejected into the container, thus eliminating air pockets. In the hand operated machines, the operator is relied upon to lower the container away at the proper speed so as to accomplish this end.

Semi-automatic and full automatic machines of the piston type operate on a similar principle, except that two or more piston pumps are utilized along with a conveyor which intermittently carries the containers forward. A cam operated table raises the containers at the filling station and lowers them away in timed relationship with the piston stroke. The containers can be automatically discharged onto a conveyor for subsequent packaging operations.

Machines are also available of the full automatic constant motion rotary type. This type of equipment can be hand fed by an operator placing empty containers on the trays of the machine. This construction is usually recommended where there is a wide variety of shapes and sizes to be handled. These machines can also be automatically fed and are well adapted to conveyor line operation where there are previous and subsequent operations to be performed. For this purpose, a star wheel is utilized and the containers are removed from the conveyor thereby and automatically returned to the conveyor after filling is completed.

There are two general constructions of the rotary type machine. In one there is a series of piston pumps mounted above and rotating with the containers, so that each stroke of a piston fills the container below it. In the other there is a pump of the rotary impeller or piston type, depending upon the product to be handled, and a valve head arranged so that the entire discharge from the pump is ejected into one, and only one, container at a time. In recent years, this type of equipment has been greatly improved so as to give greater speed, cleaner filling and a wide capacity range with minimum changeover time. There have also been added no jar—no fill and other safety devices, so as to render the equipment fool-proof. The rotary impeller pump has the distinct advantage of a constant velocity of material flowing through it in one direction, so as to minimize its wear and thereby indefinitely hold its accuracy.

Constant weight measuring equipment contains a scale as an integral part of the machine. As the container is filled to a point where it is equally as heavy as a predetermined weight placed on the other platform, the balancing of the scale causes the filling valve to be tripped and the flow then stopped. These units are principally of the hand operated type and generally give no greater speed than an operator can obtain with a

SERIES No. 30 ROTARY TABLET MACHINE—*350 to 750 TABLETS per minute . . .*

Entirely new modern streamline design specially engineered through our wide experience of more than forty years in building Rotary Tablet Machines.

Uniflo granulation feed through Head to Improved Feed Shoe.

Rotary Head full floating, mounted on Timken Roller Bearing.

Rotary Head Drive through worm gear with Timken Roller Bearings.

Smooth easy action 7½" Twin Disc Clutch, with conveniently located Shifter Lever.

Variable Speed Motor Drive built in Unit.

Overload Safety Device adjustable for various pressures.

Suction Tube through center of Head for connection to suitable vacuum line for removing dust sifting through Dies and lodging on Shank of Lower Punches.

Upper Pressure Roll adjustable in four positions.

Machine totally enclosed and protected from dust.

Specifications

Capacity per minute.....350 to 750 tablets
Maximum depth cell.....$^{7}/_{8}$"

AUTOMATIC TUBE FILLING, CLOSING and CRIMPING MACHINE

Many new features make these Colton Tube Machines more flexible in speed and smoother in operation. Models available for pastes, powders and liquids. Send for full details and specifications.

Write for our latest catalog, which fully illustrates and describes Colton equipment.

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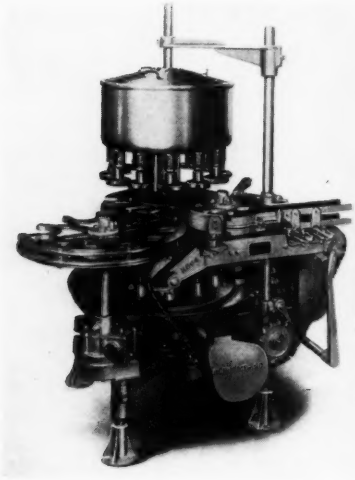

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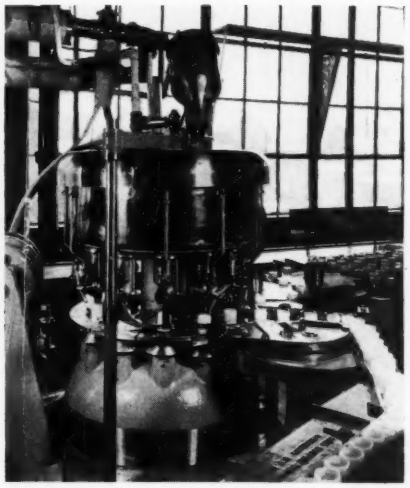

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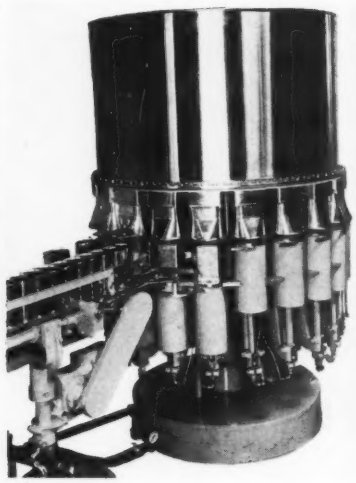


12

10. Twelve-valve automatic rotary filler, gravity type, for soups, syrups, fruit juices and saucing of beans, etc., in open top cans. Courtesy Horix Mfg. Co. **11.** Predetermined level filler for free flowing products. Fills to a pre-set point in container. Courtesy Food Machinery Corp. **12.** Twenty-head rotary vacuum filler with automatic intake and discharge lines. Courtesy Modern Packaging Machinery Co.

hose with nozzle-valve, but offer the distinct advantage of clean and accurate filling.

The constant level equipment is principally used for light, free-flowing liquids. The siphon filler was the earliest design in this category and is still used for some hand operated units. In these machines, the container is filled until the liquid level therein is the same as that in the float controlled supply tank. Its disadvantage lies in the fact that as the two levels approach one another, flow becomes progressively slower, so that high-speed production is impossible. There is, however, no overflow to be handled with this method.

Direct pressure machines require that the neck of the container be sealed, usually with a rubber stopper through which passes the filling stem. This stem contains both liquid and air passages so that, as the product flows through under a gravity head pressure which may vary between three and fifteen feet, the air is permitted to escape. When the container is filled, the air escapes by the passage provided in the filling tube, the liquid then begins flowing out through that passage, but, since the opening is small, it runs at a greatly reduced speed. This type of equipment is faster than the siphon units and is obtainable in all sizes from hand operated to full automatic.

Drip and the filling of defective containers can be prevented by the use of a variant of the direct pressure construction known as the "gravity vacuum." In this design the supply tank, mounted above the filling tubes, is kept under vacuum, so that vacuum must be created in the container before the liquid can be permitted to flow into it by gravity.

In full automatic equipment, the straight vacuum principle is frequently used. In this construction, the float controlled supply tank is mounted below the filling tubes. The containers are sealed, as in the direct pressure units, and the air withdrawn from them. The reduced pressure thus produced causes the liquid to be drawn into the containers, the overflow going out through the air tubes just as in the pressure machines. The liquid is separated from the air by an automatic trap, the liquid being returned to the supply tank and the air going out through the vacuum pump. These machines are available in all sizes from hand operated units to completely automatic.

Into full automatic liquid filling equipment there have been incorporated, in the last few years, many safety devices which make for smooth, top speed operation with a minimum of stoppage. Machines have devices guaranteeing protection against damages otherwise resulting from carelessness on the part of the operator or from choke-neck or misshapen containers or even the stopping of other machines in the line.

Operating speeds of filling machines of the automatic varieties have been substantially speeded up during the past few years, machines now in operation in some plants working at speeds of as high as 300 14-oz. bottles per minute. Of course, speed—while of great importance—is but one of a number of considerations by which a filler should be judged. Among other important factors are ease of adjustability and ease of cleaning. Machines for foods and chemicals are often made with stainless steels or other reaction-resisting materials on all parts coming into contact with the material being filled.

Semi-automatic units are generally of the straight line type through which the containers are advanced intermittently. Full automatic equipment of both the straight line and rotary types is obtainable.

HORIX MANUFACTURING CO.

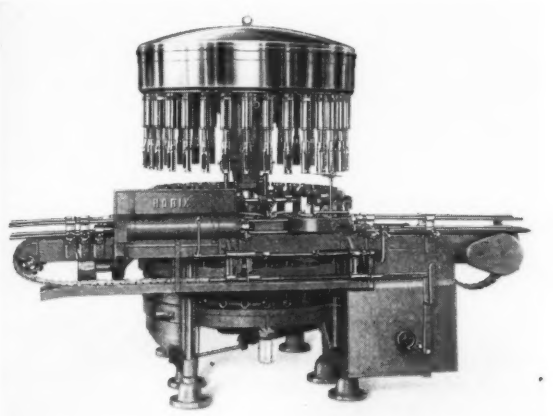
PITTSBURGH (4), PA.

Manufacturers of HORIX, HALLER, and BERGMANN Filling and Conveying Equipment

PRODUCTS HANDLED

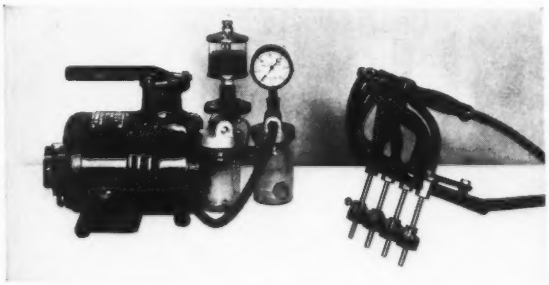
Whiskey	Bluing	Medicines	Chili Sauce
Wine	Catsup	Extracts	Tomato Pulp
Liqueurs	Vinegar	Drugs	Ice Cream
Gin	Syrup	Insecticides	Cottage Cheese
Water	Brine	Fruit Juices	Sour Cream

AUTOMATIC ROTARY FILLERS



Suitable for plants requiring maximum continuous speed with minimum labor. Feed, filling and discharge are completely automatic. Automatic safeties prevent damage and lost time due to defective containers. Bottle Fillers available in 7, 9, 14, 18, 20, 24, 28, and 32-valve sizes, will fill all types of containers, up to 400 a minute. Can Fillers are built with 6, 10, 12 or 18 valves to suit special requirements, filling soups, fruit juices, etc., and syruping or saucing beans, spaghetti, etc., at speeds up to 250 a minute. Operate with all standard washers or closing machines. Quickly adjusted to different sizes of containers. Fill uniformly, without drip or waste. Easily dis-assembled for cleaning or adjusting. Sturdily constructed to insure dependability and long life. Safety devices automatically stop the machine in case of jams at infeed or discharge, and prevent damage for filling machine and costly production delays due to choke-neck bottles.

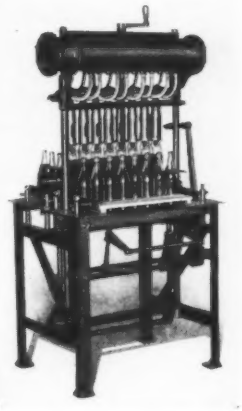
PORTABLE VACUUM FILLER



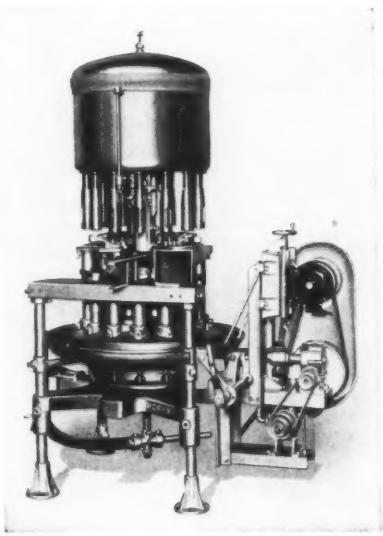
A simple, easily-operated machine of wide adaptability. Consists of compact motor-pump unit, with built-in switch; light-weight filling head, with quickly adjustable valves; over-flow jar; necessary hose connections. Motor can be attached to any light socket. Filling head balanced to minimize fatigue. Corrosion-resisting contact parts, easily cleaned, furnished to suit requirements.

MODEL NV STRAIGHT-LINE FILLER

Ideal for filling small lots of different products into a variety of containers. Handles any shape or size of bottle from 4 oz. to 1 gal. Change from one size container to another is quickly and easily made. Empty bottles are fed by hand. Fills 4 to 12 bottles at a time, depending on their size. Whiskey can be filled at rate of 45 a minute. Filled bottles can be discharged onto a moving conveyor. Does not require expert mechanics for satisfactory operation. Exclusive Gravity-Vacuum System prevents loss due to defective bottles. All parts accessible for cleaning. Corrosion-resisting contact parts can be supplied.



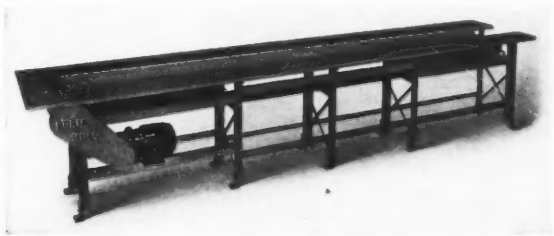
SEMI-AUTOMATIC ROTARY FILLERS



Empty bottles are fed by hand; filling and discharge are automatic. Can be built to handle all sizes and shapes of bottles from 2 oz. to 1 gal. at speeds up to 60 a minute. Quickly adjusted to different size bottles. Fills uniformly, without drip or waste. Easily disassembled for cleaning or adjusting. Sturdily constructed to insure dependability and long life. Can be operated by unskilled labor.

CONVEYORS AND WORK TABLES

Chain Conveyors, which speed up production and save labor, can be furnished, with Semi-Automatic Corkers, to meet all requirements. Work Table Conveyors, for capping, corking, labelling and inspecting, can be supplied to order. (See cut below.) Frame of heavy angle iron, rigidly braced. Legs adjustable.



Capping and Sealing Equipment

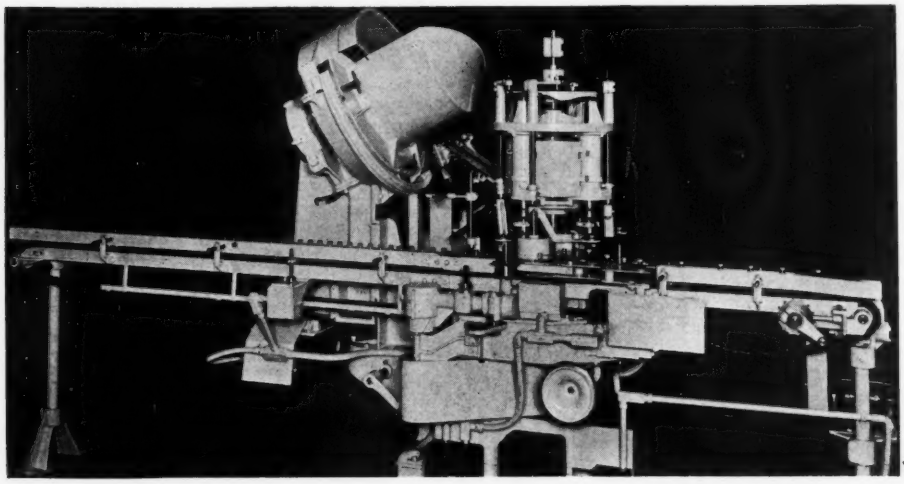
Machines are available for applying screw caps, crowns, corks and vacuum caps to containers at varying rates of speeds and under a wide range of differing operating conditions. Such machinery varies from the simplest hand cappers to high-speed fully automatic equipment, operating on conveyor lines in conjunction with filling and labeling machines.

Screw and Turn-On Caps

The application of the screw cap closure is not as difficult a problem as it at first appears. When the cap is properly designed so that the lead threads readily follow the thread on the glass, thus preventing any tendency to cross thread, and the liners are glued into the cap or attached in a satisfactory manner so as to prevent their falling out of the cap, it is possible to employ automatic equipment in applying these closures.

There are several types of machines available for applying turn-on caps. On some of these it is only necessary to dump the caps in a hopper, from where they are systematically sorted and fed to the machine in relative cooperation with containers received from the filler. On others, generally referred to as semi-auto-

Cross References: Tin Packages and Cans, page 232; Glass Bottles and Jars, page 256; Primary and Secondary Closures, page 263; Glass Finishes for Closures, page 295; General Considerations in Machine Installation, page 378.



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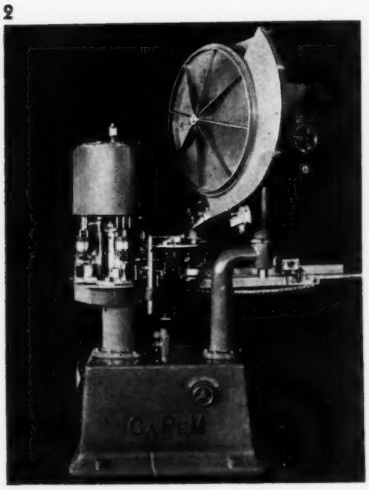

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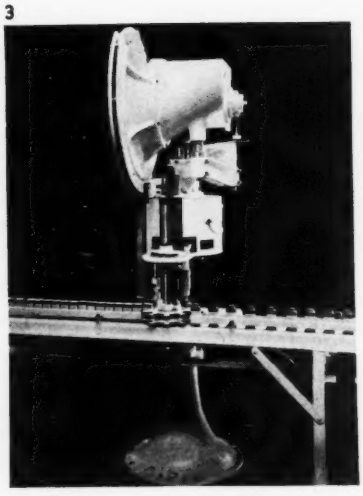

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1. Four-head rotary capper, fully automatic, in operation. Photo courtesy of the Pneumatic Scale Corp., Ltd. **2.** Full automatic four-spindle rotary capper. **3.** Full automatic capper designed for sorting, feeding and applying square cover assembly to can bodies. **4.** Automatic two-spindle rotary type capper designed to meet requirements of firms having an intermediate output. Photos courtesy Consolidated Packaging Machinery Corp.

BOSTON-BLISS-LATHAM

WIRE STITCHING MACHINES

BOX STITCHERS

Fig. 1. Bliss Box Stitcher

BLISS HEAVY DUTY BOX STITCHER

The Bliss Box Stitcher is built for heavy duty work on all grades and thicknesses of boxboard used for corrugated and solid fibre shipping containers; also suitable for all kinds of telescope containers, suit boxes, folding boxes, set-up boxes, cracker caddies, display boxes, etc. Adaptable for stitching paper bags, bag handles, sheet metal and various other specialties.

The Bliss Box Stitcher will form and drive as many as 500 stitches per minute. The only limitation on production is the ability of the operator to handle the stock through the machine. Speed of machine may be varied to suit the nature of work by changing the motor pinion.

Clearance between the stitcher head and clinching anvil is $1^5/_8$″, a valuable feature facilitating insertion of heavy work and aiding visibility.

The stitcher may be equipped with tables, gauges or other fixtures to guide work and assist in high speed operation, and in handling specialty work.

This machine is recommended for plants having continuous steady production of all types of containers and any work that demands the sturdiest type of stitching equipment.

SPECIFICATIONS. Bliss 90° or 45° Stitcher Head; uses any of the standard ribbon and Hybar wires, also other flat and round sizes. (See page 411 for complete description of Bliss Heavy Duty Stitcher Head, and wire data.)

Three throat lengths—15″, 25″ or 33″. Extra long throat lengths up to 48″ may be supplied, as ordered.

Standard Heights, 40″, 45″, 50″, from the stitching point to floor.

Motor, $^1/_4$ HP any desired electrical specification.

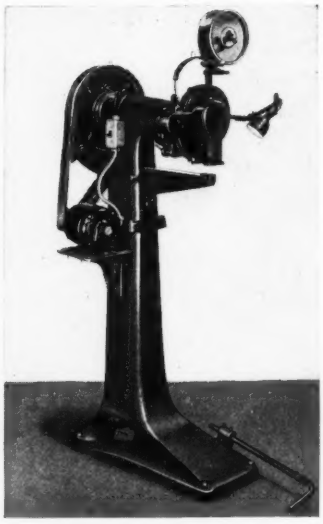


Fig. 2. Improved Latham No. 34 Box Stitcher

IMPROVED LATHAM NO. 34 BOX STITCHER

This new Latham Stitcher is a moderately priced machine for stitching the regular run of folding boxes, set-up boxes, paper bags, bottle carriers, and for manufacturing operations requiring wire stitching. The lighter weights of shipping containers, either corrugated or solid fibre, also come within the range of this stitcher. Working parts are stronger and heavier than those of previous Latham models, and are concealed for protection against dust and grit.

Uses .017 or .020 ribbon wire; No. 1 or No. 2 Hybar wire. Crown of stitch, $^7/_{16}$″. Capacity .360 inch. Speed up to 300 stitches per minute. $^1/_4$ HP motor. Throat length 12″.

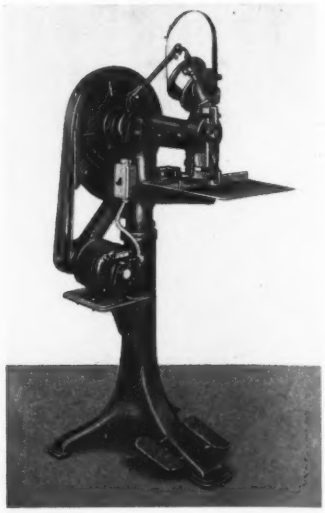


Fig. 3. Boston No. 10 Box Stitcher

BOSTON LIGHT DUTY BOX STITCHER

The Boston No. 10 Box Stitcher is a light model machine equipped with the Boston No. 26-D Narrow Stitcher Head. Clearance between stitcher head and clincher anvil is $^3/_4$″. Wire used is 21 x 25 flat, 21 to 25 or 25 to 28 round, and work up to $^1/_4$″ in thickness may be stitched. Crowns may be furnished for $^3/_8$″ or $^1/_2$″. Height from floor to stitching point is 36″.

It is adapted for light stitching operations, either on boxes or flat work such as bag sealing and attaching articles to cards. When built to drive a pointed stitch and equipped with a table it is much used for attaching tickets to hosiery and other textile articles.

Distance from stitch to inside edge of frame is 10 inches.

BOSTON ADJUSTABLE MULTIPLE HEAD STITCHER

Boston Adjustable No. 27 Multiple Head Stitcher uses No. 15 Type Heavy Duty Boston Stitcher Head. Throat, 15 inches. This machine may be equipped with two or three heads, as required by the nature of the work. Heads are adjustable sidewise, with a minimum spacing of 3″ from center to center, and maximum spacing of 16 inches. Uses $^1/_2$″ crown stitch, and stitches work up to $^1/_2$″ in thickness. Drives all sizes of ribbon and Hybar wire, also other flat and round sizes. Table is equipped with adjustable back and side gauges for registering work.

Used for stitching suit boxes, cartons and other types of folding or set-up boxes, and for any other stitching requiring two or three stitches uniformly spaced.

Available with solid clincher or moving clincher as ordered.

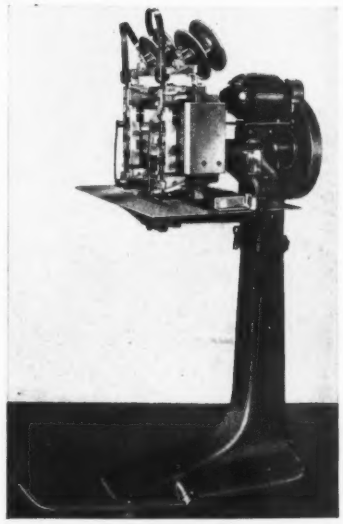


Fig. 4. Boston No. 27 Multiple Head Stitcher

DEXTER FOLDER COMPANY
330 West 42nd Street, New York, N. Y.

BOX STITCHERS

BOSTON NO. 22 MULTIPLE HEAD STITCHER

The new Boston No. 22 Multiple Head Stitcher is a moderately priced machine for stitching bags, small box ends and other operations where two stitches are required. Among the advantages of this machine are rapid stitching (two stitches driven at each operation), accurate placing of stitches for appearance, and ready accessibility for making adjustments.

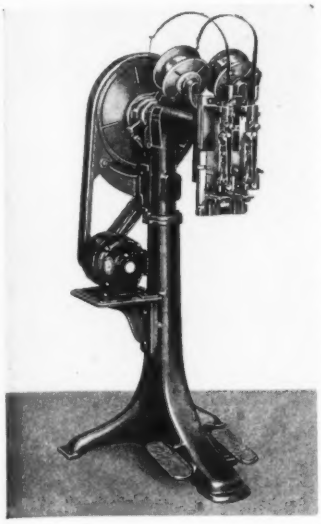


Fig. 5. Boston No. 22 Box Stitcher

Two Boston No. 26-D Narrow Stitcher Heads mounted on a short rail provide for placing the stitches as close as $1^{7}/_{8}$ inches from center to center, and as far apart as 5 inches. The distance between the stitches can be varied as desired up to the limits mentioned.

The throat length is $2^{1}/_{4}$" and clinchers are of the solid type. Movable clinchers or short blade anvils can be furnished on order. Heads will handle wire No. 21 x 25, 20 to 25 round, or 25 to 30 round, with $^{3}/_{8}$" or $^{1}/_{2}$" crown. Special crowns of $^{1}/_{4}$" and $^{5}/_{8}$" may also be obtained. Motor, $^{1}/_{6}$ HP.

BOSTON PORTABLE BENCH STITCHER

With this new Boston Portable Bench Stitcher, you will often find it more convenient to take the machine to the work to be stitched rather than carry the work to the stitcher. The machine is intended for light stitching operations, such as sealing filled bags by wire stitching, attaching articles to cards, and making small boxes.

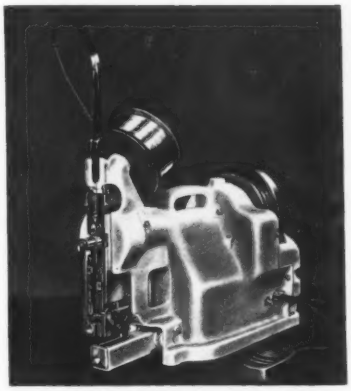


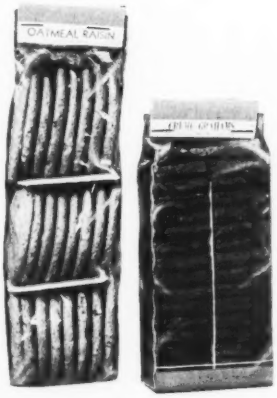
Fig. 6. Boston Portable Bench Stitcher

Baking companies and similar plants in the food industries use this machine extensively for sealing and stitching labels to their packaged goods.

The Portable is readily carried from one location to another, attached to light socket and put into operation without delay. It is electrically tripped by means of solenoid operated by a foot pedal which may be placed in any convenient position under the table.

Stitches work up to $^{1}/_{4}$" in thickness and has a throat length of 4". Uses No. 26-D Stitcher head for 25 to 30 round wire. Crown $^{3}/_{8}$" or $^{1}/_{2}$" as ordered. Motor $^{1}/_{20}$ HP, 110V, AC, 60 cycle.

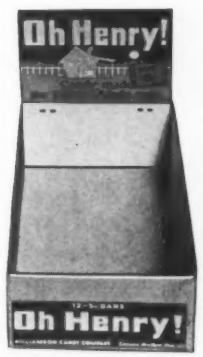
EXAMPLES OF BOX STITCHING



Bags Stitched on Portable Bench Stitcher

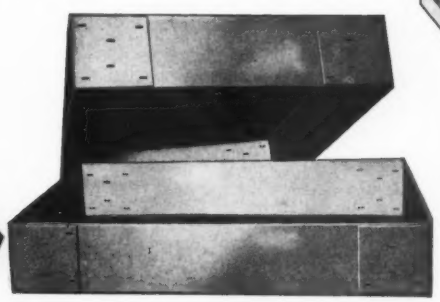
Hardware Box, stitched on Box Stitcher

Folding Suit Box, stitched on Box Stitcher

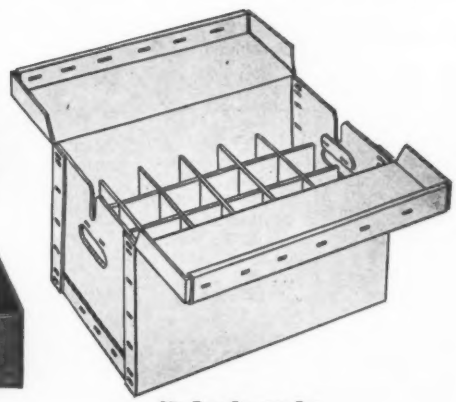


Display Box stitched on Box Stitcher

Shopping Bag, stitched on Box Stitcher



Telescope Box



Bliss Type Beverage Box

BOTTOM STITCHERS

Fig. 7. Bliss Bottom Stitcher

BLISS BOTTOM STITCHER

The Bliss Bottom Stitcher, equipped with the Heavy Duty Stitcher Head, is recommended for stitching the bottoms of regular slotted containers, Bliss Collapsible boxes and many other purposes, where maximum production is required.

The machine operates at speeds up to 300 or more stitches per minute and handles all the usual sizes of shipping containers. No adjustments are required for any size of container within its range. Production varies from four to eight cases per minute.

For medium sizes of boxes the $1^5/_8$" clearance between post and stitcher head allows sufficient space for convenient handling without tilting the post; for large size boxes the post is moved forward by means of a foot lever to aid placing the box in position for stitching. The head of the post, which contains the clincher, may be adjusted up or down with a few turns of the wrist. A heavy spring is mounted in the post permitting clincher to accommodate variations in the thickness of stock. Adjustments are provided to take up any wear in the post at the joint.

The rugged construction of the Bliss Bottom Stitcher assures long service on heavy duty work.

SPECIFICATIONS. Built in two sizes: 15" or 25" throat.

Motor, $^1/_4$ HP any electrical specification desired.

Height to clinching point from floor 45" or 50".

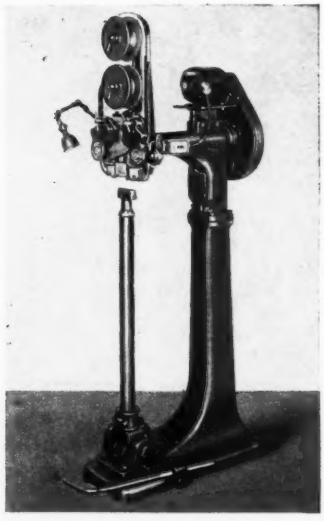


Fig. 8. Bliss Duplex Bottom Stitcher

BLISS DUPLEX BOTTOM STITCHER

The Duplex Head Bottom Stitcher drives two stitches simultaneously, enabling an increase in production of 50% to 60% over what is possible with single head stitchers, without increasing labor cost. This new bottom stitcher is proving to be a popular machine in plants handling large quantities of containers, both of the type having outside flaps to meet, as well as lap.

It is recommended for the following products: canned goods, bottled goods and other food products; shoes, tissue paper, soap and any commodity packed in quantity.

One operator can stitch 6 to 12 boxes per minute. With two operators (one folding and one stitching) as many as 18 boxes per minute can be stitched.

Machine is equipped with Bliss Heavy Duty Duplex Stitcher Head, and post with double clinching bar, spaced for driving stitches $2^1/_2$" apart (the spacing required by the Railroad Classification). One pedal controls operation of post and stitching head, reducing time to insert and remove the box. No adjustments are required for various sizes of boxes. Corrugated or solid fibre boxes may be stitched with equally satisfactory results.

SPECIFICATIONS. Built in one size with 15" throat length.

Height to clincher 45". Drives up to 600 stitches per minute.

Motor, $^1/_3$ HP any electrical specification required.

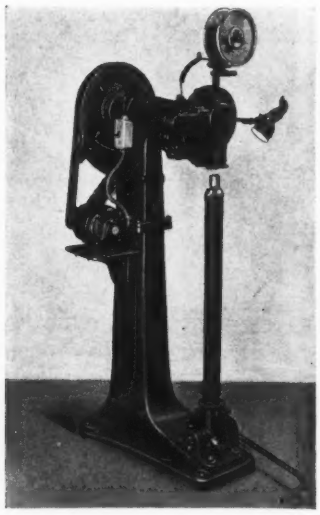


Fig. 9. Improved Latham No. 34-B Bottom Stitcher

IMPROVED LATHAM BOTTOM STITCHER

The Improved Latham Bottom Stitcher, which is moderately priced, has many features heretofore found only in the highest priced Stitchers. It is recommended for stitching the lighter grades of corrugated and solid fibre shipping containers, in all the usual sizes, which do not require the heaviest kind of stitching. The heavy duty working parts are larger and stronger than those of previous Latham models. The cutting, forming, driving and other moving parts are made of hardened tool steel which long experience has proved to be the best for the purpose. Formers and driver are readily removable, and are reversible, thus doubling their length of service. The entire stitcher head is removable as a unit for quick, economical servicing. A reliable ring type clutch is used, and the electric switch is protected against overload. Equipped with double V belt drive.

Uses .017 to .020 ribbon wire; No. 1 or No. 2 Hybar wire. Crown of stitch, $^7/_{16}$ inch. Capacity .360 inch. Speeds up to 300 stitches per minute. $^1/_4$ HP motor, any electrical specifications required.

Regular Slotted Containers with the bottoms wire stitched are stronger and more rigid than when sealed with glue or tape. Especially when canned goods, bottled goods and similar products are packed and placed in storage, wire stitching is more secure and dependable because it is not affected by either moisture or heat. When fastened by wire stitching the containers remain fastened. Labor cost of bottom stitching is less than that of hand gluing or taping, for the reason that one person can stitch a great many more containers per hour on the Bliss or Latham Bottom Stitcher. The cost of wire stitches is nominal—only four to five cents per 1000 stitches. Boxes either with outer flaps to meet or with overlapping flaps may be wire stitched.

Regular Slotted Container, showing bottom stitched on Bottom Stitcher

DEXTER FOLDER COMPANY
330 West 42nd Street, New York, N. Y.

COMBINATION STITCHERS

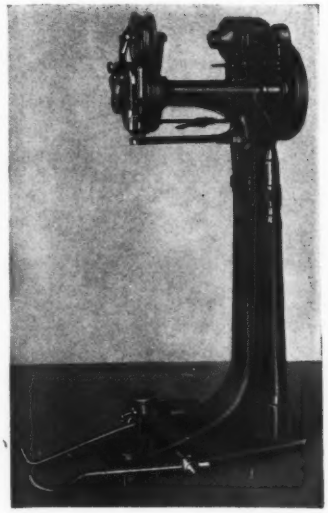


Fig. 10. Bliss Box and Bottom Stitcher

Fig. 11. Bliss Top and Bottom Stitcher

Fig. 12. Bliss Top and Bottom Stitcher

BLISS COMBINATION BOX AND BOTTOM STITCHER

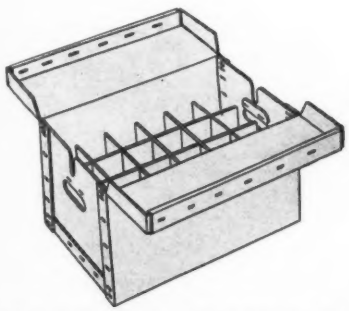
This is a general purpose machine which enjoys a wide use in a great variety of industries as it can be used for regular box stitching, and also for bottom stitching of containers. It is especially popular in plants using both Bliss No. 4 boxes and regular slotted containers. The former can be assembled on the box arm; the latter can be bottom stitched on the post.

Output on this machine is the same as that obtained on the Bliss Box Stitcher or the Bliss Bottom Stitcher.

When used for box stitching the post is removed and placed in a convenient socket on the pedestal, and the box arm placed in position; when used for bottom stitching the box arm is folded down and post placed in operating position. Change can be made in one minute. A small table may be attached to the box arm if desired.

The machine is built in two sizes, with 15″ and 25″ throat, respectively. The Bliss Heavy Duty Stitcher Head is used.

SPECIFICATIONS. 300 stitches per minute. Height to clincher 45″ or 50″. Motor, 1/4 HP any electrical specifications required.



Bliss type container for delivering beer and other bottled beverages. Assembled on Bliss Box Stitcher or Bliss Box and Bottom Stitcher

BLISS COMBINATION TOP AND BOTTOM STITCHER

This combination machine is used both for bottom stitching and top sealing. It is intended for plants whose production does not warrant installation of separate Bottom and Top Stitchers.

It is much used in such industries as shoe manufacturing, meat packing, and shipping of food, shingles, rubber goods, chemicals, etc. Output is the same as that obtained on the Bliss Quick Lift Top Stitcher or the Bliss Bottom Stitcher.

For assembling cases by bottom stitching, the blade anvil is dropped down against the pedestal and the table is swung to one side as illustrated in figure No. 11; the post is placed in a socket on the base and locked in position.

After the desired number of containers has been bottom stitched, the post is removed and table and blade anvil swung into position for top stitching as illustrated in figure No. 12. Less than one minute is required to make the change.

As the top stitching operation is always conducted on boxes that have been filled and may be of considerable weight, the work table is fitted with ball bearings on which the box may be easily moved in any direction. The table is counter-balanced and is quickly and easily adjustable up or down by hand, for boxes of varying heights.

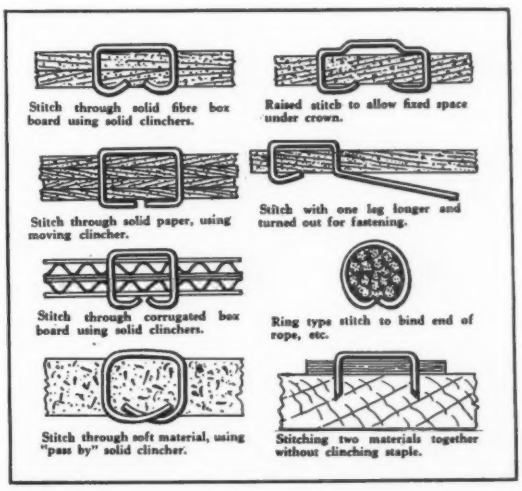
Top stitching provides a uniform pilfer proof closure that gives added strength and rigidity to the container. It also effects a considerable saving over the cost of taping the joints. Stitches can be removed with a screw driver or special tool without appreciable damage to the box.

Built in two sizes with 15″ and 25″ throats, and 26″ x 30″ work table. Handles boxes up to 25″ in depth. The standard Heavy Duty Stitcher Head is used. Motor, 1/4 HP.

Machine may be equipped with casters for moving about the plant.

TYPES OF WIRE STITCHING

These are some of the types of wire stitching that come within the range of the Bliss Heavy Duty Stitcher Head. Correspondence is solicited regarding any other types of stitches your work may require.


Stitch through solid fibre box board using solid clinchers.
Raised stitch to allow fixed space under crown.
Stitch through solid paper, using moving clincher.
Stitch with one leg longer and turned out for fastening.
Stitch through corrugated box board using solid clinchers.
Ring type stitch to bind end of rope, etc.
Stitch through soft material, using "pass by" solid clincher.
Stitching two materials together without clinching staple.

XUM

TOP STITCHERS

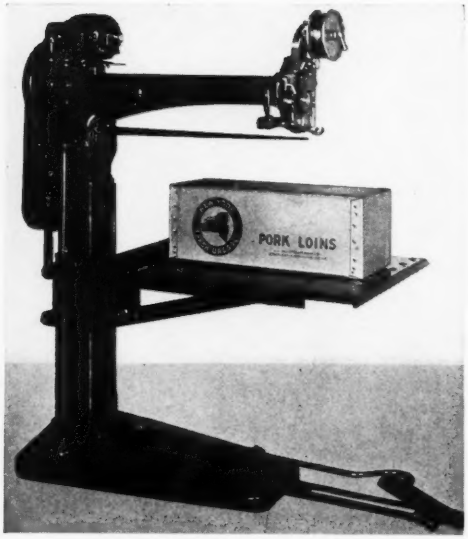


Fig. 13. Bliss Power Lift Top Stitcher

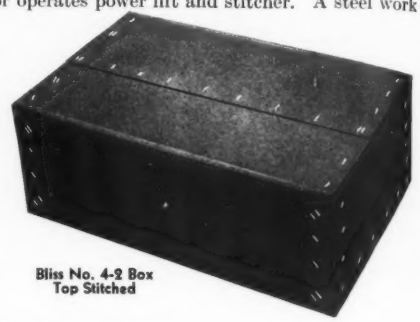
BLISS POWER LIFT TOP STITCHER

The almost entirely automatic operation of the New Bliss Power Lift Top Stitcher permits the operator to handle with much less effort many more containers per day than is possible on the quick lift top stitcher. It is recommended where large numbers of heavy containers are used and is especially suitable with conveyor installations.

By adjusting the work table to coincide with the conveyor line, filled containers may be transferred to the table without lifting, thus eliminating the possibility of tearing flaps or otherwise damaging the case.

The stitcher is equipped with a power driven work table operated by a balanced foot pedal for raising or lowering the box. A device actuated by the top of the container automatically stops the table in just the right position for top stitching. One motor operates power lift and stitcher. A steel work table equipped with steel ball bearings permits free movement of container while being stitched.

SPECIFICATIONS.
Equipped with Bliss Heavy Duty Stitcher Head.
Throat length 33″.
Table size 26″ x 40″.
Takes boxes up to 24″ in depth.
Motor, 1/3 HP any electrical specifications required.



Bliss No. 4-2 Box Top Stitched

Fig. 14. Bliss Quick Lift Top Stitcher

BLISS QUICK LIFT TOP STITCHER

The Bliss Top Sealing Stitcher is used for wire stitching the tops of regular slotted containers and Bliss Boxes.

Production depends on the size of the box; usually 3 to 5 containers of average size can be completely sealed per minute.

The clinching end of the blade anvil is quickly adjustable up or down as needed without the use of tools. The steel work table is equipped with steel ball bearings to permit free motion in any direction of the box being stitched. The table is supported by the Bliss quick lift mechanism which is positive in action and instantly adjustable up and down.

SPECIFICATIONS.
Equipped with Bliss Heavy Duty Stitcher Head.
Built in three throat lengths—15″, 25″ and 33″, accommodating boxes up to 33″ long, 33″ wide and 30″ deep.
Table sizes: 26 x 30″, 26 x 40″, and 30 x 40″.
Motor, 1/4 HP any electrical specification required.
May be equipped with casters for moving about as desired.

Bliss No. 4 Box Top Stitched

Top stitching of regular slotted containers is often preferable to gluing especially when packing light weight, fragile or bulky materials. Gluing boxes packed with such materials is difficult and uncertain for the reason that support of inner flaps is lacking and the glue may not firmly contact the outer flaps. An insecure seal results.

Top stitching of these boxes on the Bliss Top Stitcher provides a uniformly secure closure and gives added strength and rigidity to the box. Wire stitches cost less than glue or tape—only 4 or 5 cents per 1000 stitches, and a box can be stitched in less time than it can be properly taped or hand glued—a saving in both materials and labor.

To open a container that is top stitched it is only necessary to insert a screw driver or stitch remover under the stitch and raise it, with little or no damage to the box. This feature is often much appreciated by the customer.

DEXTER FOLDER COMPANY
330 West 42nd Street, New York, N. Y.

REGULAR SLOTTED CONTAINER STITCHERS

BLISS SEMI-AUTOMATIC RSC STITCHER

One operator produces 1500 or more regular slotted containers per hour, with side seams evenly stitched, on this new low cost container stitcher. The operator folds the box blank and feeds it into and through the open head device against a stop. A slight push of the blank against the stop operates the switch and automatically trips the solenoid which controls the clutch. The blank is then automatically fed through and stitched, with stitches evenly spaced in accordance with predetermined setting. Side gauges adjustable to the size of the box blank serve as guides, thus assuring a squarely stitched container.

Provision is made for even spacing of stitches, with a range of $1^1/_2$″ to 3″ between stitches. Tie stitches may be driven at each end of the row of stitches if desired. Capacity is two to sixteen stitches, and only the number of stitches for which the machine is set will be driven.

Set-up for a complete change in size of container and thickness of board may be made in approximately five minutes. This quick adjustment feature makes the Bliss Semi-Automatic practical and economical for both short and long runs.

Operates at speed of 325 stitches per minute with production of 1500 to 2000 or more containers per hour on the majority of sizes and thicknesses of board. Stitches a wide range of sizes representing approximately 90% of the boxes produced.

Equipped with standard Heavy Duty Bliss Head with 45 degree stitch. Single V belt drive. $^3/_4$ HP motor, constant speed, any electrical specifications required. Floor space 42″ x 89″. Height from floor to feed table, 43″.

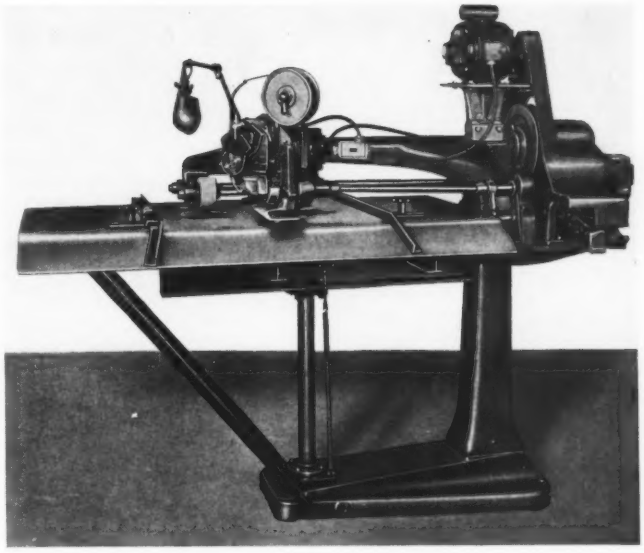


Fig. 15. Bliss Semi-automatic RSC Stitcher

BLISS DIAGONAL HEAD RSC STITCHER

The Bliss Diagonal Head Hand Fed Regular Slotted Container Stitcher, which drives the stitch at an angle of 45° to the manufacturer's seam, is a particularly desirable machine for stitching corrugated or solid fibre containers. The stitch when placed diagonally across the corrugations makes the strongest seam available. Solid fibre containers are also stronger when diagonally stitched, as the stitch is always across the grain of the board, thus enhancing its holding strength.

It is not uncommon to find this machine operating at speeds of 400 to 500 stitches per minute. As many as 10,000 containers with five stitches are frequently produced in a day's run.

The machine is equipped with the Bliss Heavy Duty Stitcher Head and a steel work table with quickly adjustable guides. The Bliss Open Head device for holding the flaps in position, is rigidly attached to the stitcher head casting and is therefore self-supporting. The clincher arm does not rest on the box blank at the moment of stitching, which feature eliminates the crushing of the corrugations or denting the board.

A parallel gauge table may be furnished on which the gauge is adjusted in one movement by a crank, and is always in correct parallel position. With this device change from one size to another is made in less than one minute.

SPECIFICATIONS. Built in 32″, 38″ and 48″ throat lengths. Height to clincher, 43″. Size of Table, 42 x 39″, 42 x 44″, and 42 x 54″.

Motor, $^1/_4$ HP any electrical specification required.

Regular Slotted Container, side stitched on RSC Stitcher

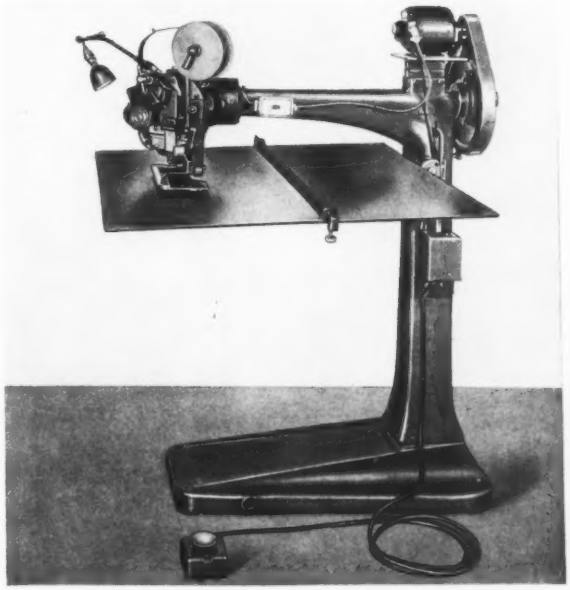


Fig. 16. Bliss RSC Stitcher (Diagonal Head)

SPECIAL STITCHER ADAPTATIONS

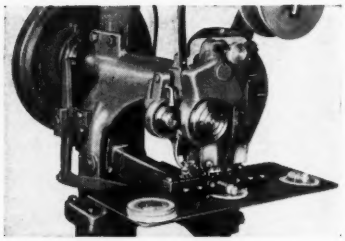
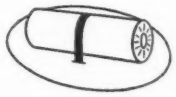


Fig. 17

BLISS AUTOMATIC LIPSTICK STITCHER

The Bliss Lipstick Stitcher is equipped with a special driver, gauges, and table for stitching metal or plastic tubes, such as lipstick containers, to cards. The stitch is driven and clinched sufficiently tight to prevent the article from turning or slipping on the card. The card and article are placed in position under the stitcher head, and a trip of the pedal drives and clinches the stitch. Various types of wire within the range of the Bliss Stitcher Head, as given on page 411 or special wires, may be used for this work.



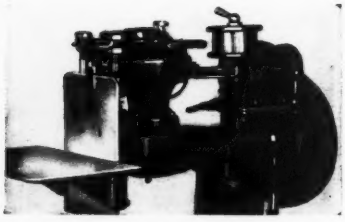
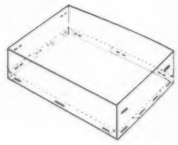


Fig. 18

BLISS CADDY STITCHER

This machine, with horizontal stitcher head and moving blade unit, is used for wire stitching covers to cartons and caddy boxes that have regular top flaps. The anvil enters a pre-cut slot in the top of the cover, or it may be sharpened for cutting its own slot. Another application of this machine is for sealing telescope boxes by wire stitching.

The box illustrated at the right is a popular container for merchandising citrus and other fruits. It is constructed with a recessed bottom, which is stitched in place and sealed with wire stitching on this machine, after the box is filled.



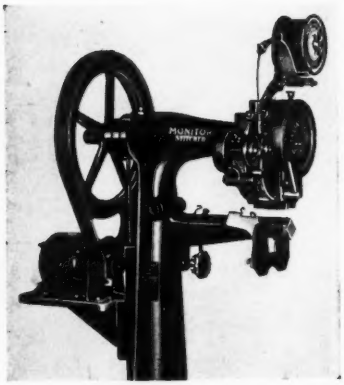


Fig. 19

LATHAM CORNER STAY STITCHER

The Latham Corner Stay Stitcher places a right angle stitch around the corner of the box. Corner stitching makes a strong box, neat in appearance, and is a practical, economical method of corner sealing. Illustration of corner stitching is shown here.

The machine is used extensively for hardware packing boxes, cracker caddy covers and boxes for other purposes; also for strengthening the higher grade set-up boxes which are later covered with paper. Operating speeds on such work as caddy covers are frequently as high as 20 or more complete covers per minute. Clinching arm is equipped with spring gauge for accurate registering of the stitch. This machine is considered the most successful corner stitcher throughout the trade. Straight cut-off or pointed stitch is optional.

Machine is equipped with Latham Roll Feed Stitcher Head which drives a stitch measuring $1/2$" from corner of box to clinch. Distance from stitch to inside of frame is 12". Wire used is .017 to .020 flat ribbon, or No. 20 x No. 25 size.

Motor, $1/6$ HP any desired electrical specifications.

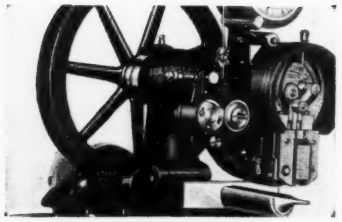
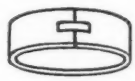


Fig. 20

LATHAM BELT LOOP STITCHER

This machine is used for stitching belt loops. It is adjustable for all sizes of loops, and as many as 50 per minute may be stitched. Stitching belt loops on this machine is more economical than any other method of fastening, and the loop is securely held.



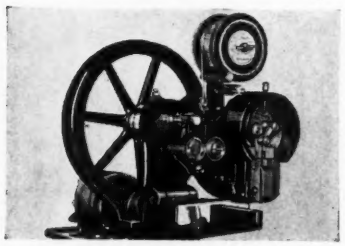
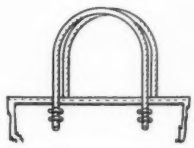


Fig. 21

LATHAM SHOPPING BAG STITCHER

This machine, equipped with special stitching mechanism, is used for stitching handles to paper shopping bags. Bag and handle are held in correct position and stitched with a special loop stitch as shown in illustration. Users prefer this model for bag handle stitching.



DEXTER FOLDER COMPANY
330 West 42nd Street, New York, N. Y.

BLISS STITCHER HEAD

The Bliss Heavy Duty Stitcher Head is used on all types of Bliss Stitchers, except the Bliss Portable Stitcher. It is the fastest, strongest, most durable and dependable Box Stitcher Head built.

OPERATION.

At each operation wire is fed from the spool, cut to a predetermined length, formed into a stitch and the latter driven through the material and clinched. This work is performed at speeds up to 500 operations (500 stitches) per minute.

CONSTRUCTION.

Because of the heavy wire used for box stitching, and the high operating speed, only the best and most durable materials will withstand the wear and tear to which the Bliss Stitcher Head is subjected. Therefore the cutting, forming, driving and other moving parts are made of hardened tool steel which long experience has proved to be the very best for the purpose and reduces maintenance cost to a minimum.

Extra large working surfaces of cams, long bearing surfaces for former slides, specially hardened knives which can be reground many times, and numerous other engineering features, all contribute to the successful operation and long service of the Bliss Stitcher Head.

The head is easily detachable for service. The wide clearance of $1^5/_8$" between clincher head and anvil facilitates insertion of heavy work and aids visibility at point of stitching.

SPECIFICATIONS. One adjustment changes the length of wire drawn for varying thicknesses of stock to be stitched.

Interchangeable parts may be furnished for driving the various sizes of wire, including ribbon, highbar and other flat or round sizes.

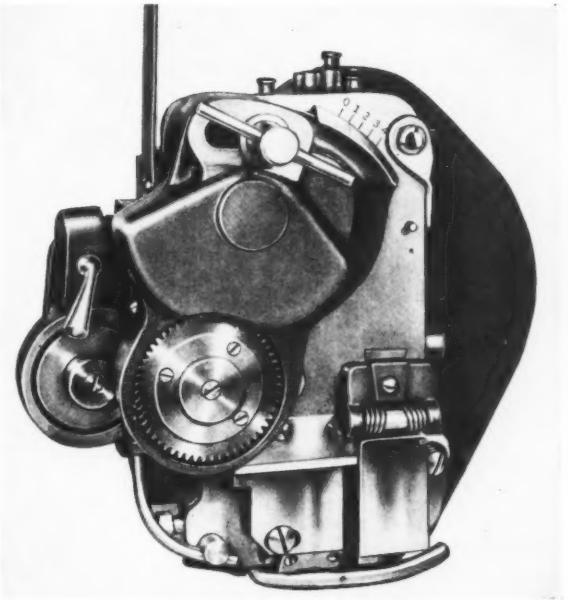


Fig. 23. Bliss Heavy Duty Stitcher Head

Standard widths of crown, $^3/_8$" and $^7/_{16}$". The head may also be equipped to drive stitches of $^1/_4$", $^1/_2$", $^9/_{16}$", $^3/_4$", $1^1/_8$" and $1^3/_8$".

A special sharp stitch cutting block may be furnished to give a pointed stitch for use with corrugated board.

SOLENOID CONTROL FOR STITCHERS

A recent improvement which may be applied to any type of stitcher is the substitution of electrical for mechanical control. In the mechanical type the clutch is engaged and released by a foot pedal mechanically connected. The electrical control employs a movable floor switch actuated by slight pressure of the operator's foot, and the clutch is engaged by the action of a solenoid mounted on the frame of the stitcher. When the foot is removed from the switch the solenoid ceases to act, and a spring releases the clutch.

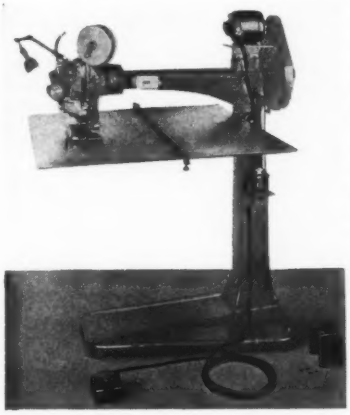


Fig. 22. Illustrating Solenoid Control

Among the advantages of this type of control are:

1. The foot switch may be placed in any desired position which is advantageous when large blanks are being stitched, or when the operator works in seated position.
2. The operator's foot does not have to be raised as high from the floor, and the foot pressure required is less than where manual control is employed, both of which factors reduce fatigue.
3. The operation of the clutch is more positive, and there is less chance for repeating than with the manual trip.

This type of control is optional on all Bliss stitchers at a small additional cost.

PARTS, WIRE AND MECHANICAL SERVICE

All Dexter Offices carry replacement parts for all types of Bliss, Boston and Latham Wire Stitching machines, and are prepared to render prompt and efficient service to any of these makes of stitchers.

A stock of all the usual sizes of box stay and bookbinder's wire is available at all offices for prompt shipment.

Your orders for parts, service, rebuilding and wire are solicited.

DEXTER ENGINEERING SERVICE

Every manufacturer has some conditions in his shipping department that may be improved or changed to his advantage either for greater efficiency or for economy.

The Dexter Folder Company maintains a corps of engineers who have had extensive experience in packaging and preparing for shipment a great variety of products.

The services of our organization are available, without obligation to you, for making a survey of your packing and shipping departments to determine the most economical methods of handling and protecting your goods while in storage and transit—when they are no longer under your control.

XUM

TYPES OF BLISS BOXES

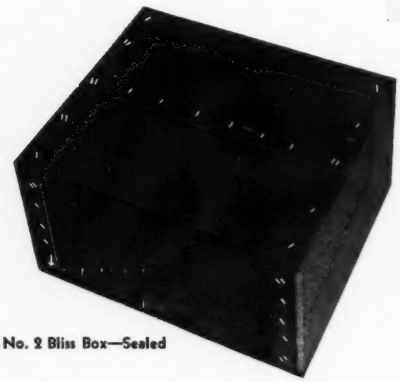
No. 2 Bliss Box—Open

The most popular types of Bliss Boxes are the No. 2, No. 4 and No. 4-2 models.

Bliss No. 4 Box—Open

When No. 2 Box is assembled, the flanges form a double thickness of board on all vertical seams on the sides, and on horizontal seams at each end of the box.

When No. 4 box is assembled the three flanges form a double thickness on the ends, which gives added protection for canned goods and other commodities where an end thrust of the contents is to be guarded against.



No. 2 Bliss Box—Sealed

This New Bliss Wire-LockSeal Box may be sealed, opened for inspection and re-sealed without damage to the box.

Wire stitches with arched crown attached to top panel and body of box provide means for locking the cover with wire or strips of metal which may be sealed with lead seals. Such seals are readily broken without damage to the box and after inspection or repacking new seals may be applied. This box, with arched wire seals attached is manufactured by leading container companies.

No. 4 Bliss Box—Sealed

BLISS BOXES ARE THE SAFEST SHIPPING CONTAINERS

Packing goods in BLISS BOXES assures the manufacturer of the greatest possible margin of safety to his goods while stored and in transit. The three-piece construction, with all vertical seams reinforced, makes the BLISS BOX the strongest corrugated or solid fibre container obtainable.

The special method of construction of the Bliss Box offers greatly increased resistance to all types of stresses, whether from within or without the box.

The various types of Bliss Boxes comply with all of the requirements of Rule 41 of the Consolidated Freight Classification.

Low in Cost

Bliss Boxes are economical because they contain no waste stock. The saving in material and freight charges reduces the total cost an average of 10% and in some instances as much as 20% when compared with other types of fibre containers. The extra strength of the BLISS BOX also often permits the use of lighter board which effects an additional saving.

Easy to Obtain, Assemble and Seal

Blanks for BLISS BOXES are manufactured under license by nearly all leading board mills and box factories in the United States and Canada and are therefore as readily obtainable as other types of shipping containers. A complete list of licensed manufacturers will be furnished on request.

Equipment for easy, convenient assembling and sealing of BLISS BOXES is furnished by the Dexter Folder Company, a sixty-year-old concern, with sales and service offices in New York, Chicago, Philadelphia, Boston, Cincinnati, San Francisco Los Angeles and Seattle.

In addition to the boxes illustrated is the No. 4-2 box which is doubly protected on all four corners and top and bottom of each end. It is the strongest Bliss Box and is desirable for carrying heavy loads, or where extreme rigidity is required for protection of contents.

Dexter men who have a wide knowledge of shipping requirements for many products will be pleased to discuss the advantages of Bliss Boxes and equipment for assembling and sealing them, at your request and convenience.

DEXTER FOLDER COMPANY
330 West 42nd Street, New York

BLISS DELIVERY BOX FOR BOTTLED BEVERAGES

Brewers and Soft Drink Makers are recognizing the advertising and sales value, convenience and economy of this new Bliss Delivery Box for Bottled Beverages.

More than one hundred Brewers have adopted this light weight, strong, attractive box for local delivery. It protects the contents from light and displays brands to the best advantage. Costs much less to make than wood or metal boxes and is used and reused many times. It is delivered flat and is set up at the plant in quantities as needed, thus requiring a minimum of storage space.

This new delivery box is another example of the utility of Bliss Boxes. Manufacturers are invited to consult with our engineers, who are available for making a survey of their packing and shipping departments. They can determine for you the most economical methods of protecting your goods while in storage or transit. Write us. No obligation.

BLISS BOX ASSEMBLY MACHINES

BLISS DOUBLE HEAD ASSEMBLY STITCHER

Fig. 24. Bliss Double Head Assembly Stitcher

This machine is designed especially for the assembly of Bliss No. 2 and No. 4-2 Boxes. The standard machine handles boxes in dimensions up to 33″ x 28½″ x 28½″. Three, four or more boxes may be assembled per minute.

Stitches are driven diagonally which gives maximum strength to the seam. A work table is provided in the rear for holding the body blanks, the end panels being stacked on either side of the operator. An automatic feeding and spacing mechanism is built in so that the operator has only to place the blanks into proper position and step on the pedal. The stitches are driven simultaneously in both flanges and properly spaced. The machine is quickly adjustable for boxes of any dimensions within its range.

A special size may be furnished built to order only for handling boxes up to 65″ x 40″ x 40″, a size frequently used in the textile trade.

BLISS SINGLE HEAD ASSEMBLY STITCHER

Fig. 25. Bliss Single Head Assembly Stitcher

The Bliss No. 4 Box is usually assembled on the sticher shown here. The machine is built in three sizes with 15″, 25″ or 33″ throat length, these three sizes covering approximately the entire range of Bliss Boxes. No. 4 boxes can be assembled at the rate of two to three boxes per minute. This machine may also be used to complete the assembly of Bliss 4-2 Boxes, by stitching the extra flanges on the end panels after the box has been partly assembled on a Double Head Stitcher.

The arm of the machine is fitted with a gauge and also a panel holder to aid the operator in holding the work. This stitcher is also made with a collapsible arm and a removable bottom post, for use in assembling both Bliss Boxes and slotted containers in plants where both are used.

Among Over 300 Present Users of Bliss Boxes are the following representative concerns:

American Salesbook Company
Armour and Company
P. Ballantine Sons
Bassick Company
Bear Brand Hosiery Company
Buckeye Brewing Company
Samuel Cabot, Inc.
Carolina Packing Company
Chicago Steel and Wire Company
Columbus Packing Company
Consolidated Brewers Supply Co.
Cooper Wells and Company
Greenway Brewing Co.
Hecker H. O. Co.
G. Heilman Brewing Co.
Hoberg Paper and Fibre Co.
Chas. Hollenback Co.
Hygrade Food Products Co.
Independent Biscuit Co.
Iowa Packing Co.
Johnson Biscuit Co.
E. Kahn's Sons Co.
Kingan and Co.
Koppitz Melchers Inc.
Plankinton Packing Co.
Prince Macaroni Company
Philadelphia Brewing Co.
J. W. Podmore and Sons
Rath Packing Co.
Ripon Food Inc.
Roberts and Oake Co. Inc.
W. B. Roddenbury Co.
St. Louis Independent Packing Co.
Schmidt Brewing Co.
Schoenhofer Edelweiss Co.
Scott Paper Co.

Bliss Boxes

Cudahy Brothers
William Davies, Inc.
Diamond Match Company
Dominion Rubber Company
East Tennessee Packing Company
Endicott Johnson Company
Federal Match Co.
Federated Textiles Inc.
Frank Fehr Brewing Co.
A. V. Fetscher
First National Stores
Fort Howard Paper Co.
General Brewing Corp.
Glass Containers Inc.
H. C. Godman Co.
Goodyear Rubber Co.
Lake Erie Provision Co.
Lay Packing Co.
Lindsay Ripe Olive Co.
Mathiesson Alkali Co.
Oscar Mayer Co.
Miller Brewing Co.
Minneapolis Brewing Co.
Merchants Rubber Factory
John Morrell Co.
National Biscuit Co.
Neuhoff Packing Co.
Ohio Match Co.
Omaha Packing Co.
Owens-Illinois Glass Co.
Pacific Brewing and Malting Co.
Pittsburgh Brewing Co.
Shredded Wheat Co.
J. P. Squire Co.
Stroh Brewing Co.
Superior Paper Products Co.
Swift and Co.
Sterling Pulp and Paper Co.
Tivoli Brewing Co.
Uniform Chemical Products Co.
U. S. Brewing Co.
U. S. Rubber Co.
Upjohn and Co.
Weiss Manufacturing Company
Whitehouse Biscuit Co.
White Provision Co.
Wilson and Company
Wolverine Shoe and Tanning Co.

DEXTER FOLDER COMPANY

330 West 42nd Street, New York, N. Y.

matic cappers, it is necessary to start the cap on the container. Regardless of the type machine employed, the caps must be applied with the proper tension so that a perfect seal is made both with the top of the bottle and the cap liner.

Hand-capping machines are, in many cases, used where production requirements are so small that the tendency is to continue with the old hand operation. For those manufacturers whose requirements are small, the adoption of at least a hand-tightening unit is recommended. This unit can be adjusted so that every cap will be applied to the proper tension in order to insure a proper seal and still be easily removable by hand.

Semi-automatic machines are of the same general construction and size as the fully automatic. The cap-feeding device, however, is omitted and the cap started on the container by hand. It is installed in the production line the same as the fully automatic and occupies the same space as the automatic machine. It has a feed conveyor and a discharge conveyor and the containers are fed and discharged automatically.

The smallest semi-automatic machine is generally a single-head machine designed for operating at capacities from 1800 per hour to about 2700 per hour. In order to obtain a larger capacity, it is necessary to employ a machine using a number of spindles rather than a single head. These units are designed to possess a capacity of from approximately 50 containers per minute to 120 or more. They are usually of the rotary type and are in practically all cases the same machine as the fully automatic, except for the omission of the automatic cap-feeding and applying mechanism.

Another variation of the semi-automatic capper is the type which uses a belt cap feed onto which the operator simply feeds the caps. From that point on, operation is completely automatic. This method is often used where closures are not suited to automatic sorting and feeding.

The semi-automatic unit can be readily changed from one size container and cap to another and the cost of attachments for the different containers is not exceedingly high. On the fully automatic machine, a change from one size cap and container to another requires a longer period of time and the attachments, of course, are much more costly.

Fully automatic machines, when it comes to larger capacities, or outputs, are sometimes found to be far more desirable inasmuch as their greater efficiency will considerably reduce packaging production costs.

Automatic units are most profitably adapted to those production lines operating at a capacity of 45 or more containers per minute. There are, however, many instances where a steady production of 35 to 40 containers per minute is needed and sizes are suited to automatic production. In such cases, a full automatic single head or slow speed multiple head unit may be desirable.

A recent development replaces the familiar hopper with a worm feed device. Since this eliminates the necessity of agitating and jumbling large masses of caps in a hopper, it permits the handling of delicate types which could not previously be handled automatically and particularly those closure types where the height exceeds the diameter.

Crowns and Corks

When plain or flanged corks are used, the capping problem resolves itself into one of inserting the cork

5. Single-head full automatic capper. **6.** Corking wheel unit on discharge conveyor of filling machine. Photos courtesy Pneumatic Scale Corp., Ltd. **7.** Semi-automatic screw capper in hook-up with hand feed, automatic discharge rotary filler (at left). Photo courtesy Horix Manufacturing Co.

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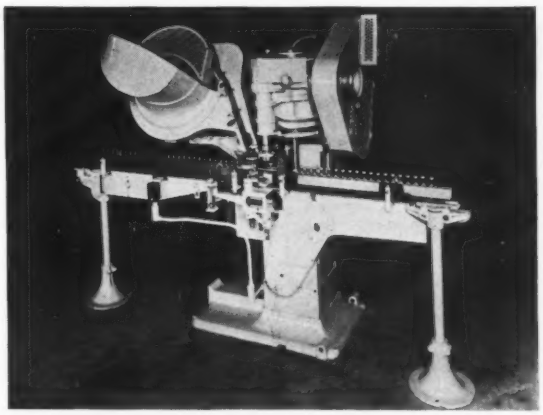

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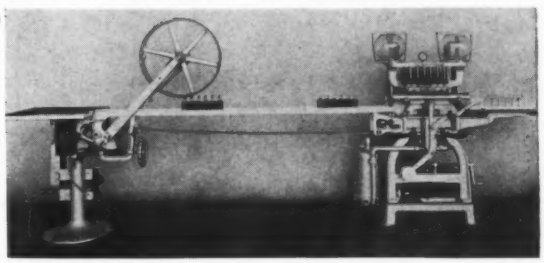

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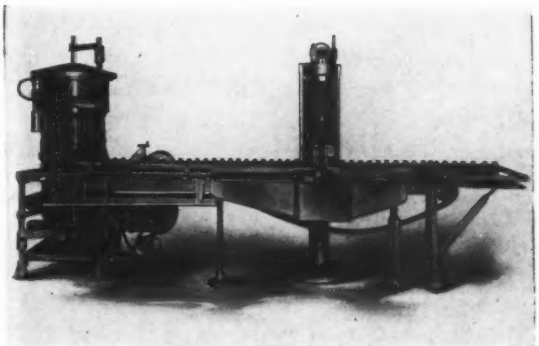

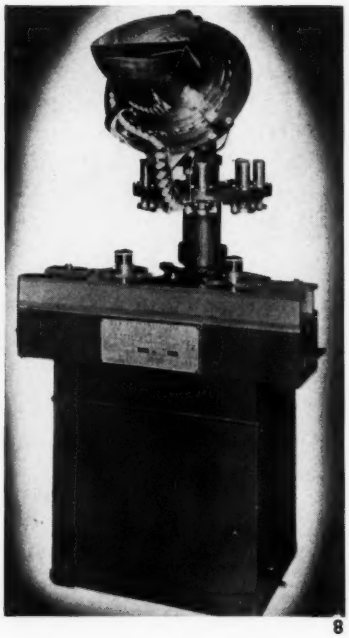

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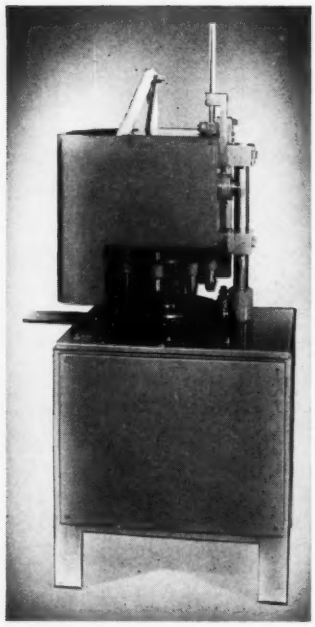

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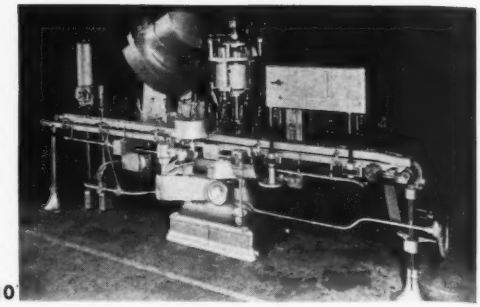

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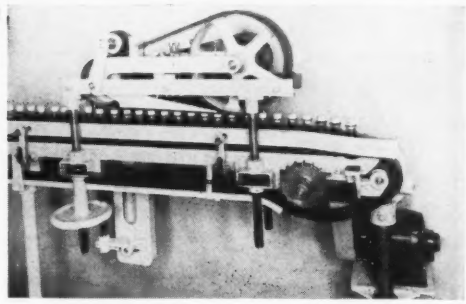

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8. Full automatic rotary corker for flanged corks. Courtesy U. S. Bottlers Machinery Co. **9.** Machine for automatically cutting and inserting cotton wads into pill bottles. Courtesy Consolidated Packaging Machinery Co. **10.** Combined capper and corker for applying screw-on caps and depressing corks. **11.** Cork depressing device operating on conveyor line. Photos courtesy Pneumatic Scale Corp., Ltd.

into the neck, rather than turning a thread. Such insertion is, in the vast majority of cases, done in part or in whole by hand. The most familiar mechanical aid is the corking wheel conveyor, which consists of a section of belt conveyor with a wheel of fairly large diameter suspended above it at the height of the bottle top. Operators start the corks as the containers pass down the forepart of the conveyor and the movement of the belt then forces the bottles, one by one, under the corking wheel. Thus a gradual and increasing pressure is applied to each cork in turn, forcing it into position.

Another type of corker substitutes an endless belt, running over two pulleys, for the corking wheel. A rigid metal plate behind the slanting lower portion of the moving belt forces the corks firmly and evenly into the neck of the containers.

Crown caps are frequently applied by equipment forming an integral part of bottle filling machines. However, separate rotary crowners of fully automatic type are available. These are very similar, in feed and general structure, to rotary turn-on closure cappers, except that they substitute a crown forming pressure for the turning action of the ordinary capper.

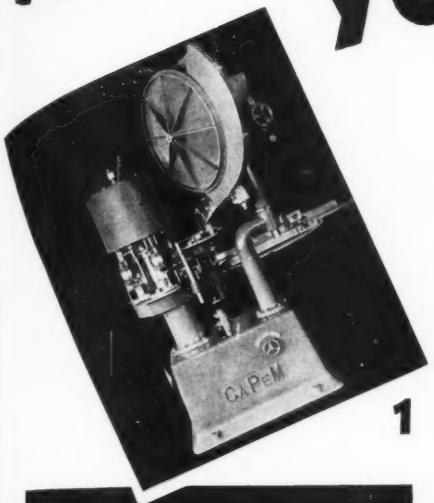
Hand and semi-automatic devices for applying crown caps, milk bottle caps, foil and paper hoods for milk bottles and many other specialized types of closure or super closure are also available. The basic principle of application varies very little, however, from those described in the foregoing discussion.

So-called roll-on caps are applied by rotary automatic machines which position the unthreaded cap on the bottle and hold it thus while revolving rollers form the cap metal to the shape of the bottle thread.

Fully automatic corking units have been devised recently for a number of special applications. In one such machine, corks are placed into correct position in the corking head for driving into the bottle neck by a positive air pressure feeding device. Corks are hopper fed into a channel that directs each cork to the correct position and register before insertion in the bottle neck. The large capacity hopper is so designed that a casual glance from the line operator will determine just when a new batch of corks is required.

Feeding of the filled but uncorked bottles into the machine is controlled by an electric feed switch. The machine is so designed as to automatically stop whenever a "break" appears in the line of advancing bottles and to remain stopped until the break is closed. The machine is equipped with a vari-drive, making possible its operation at exactly the speed called for by the production schedule and its synchronization with the other units of a packaging line.

ARE YOU PREPARED?



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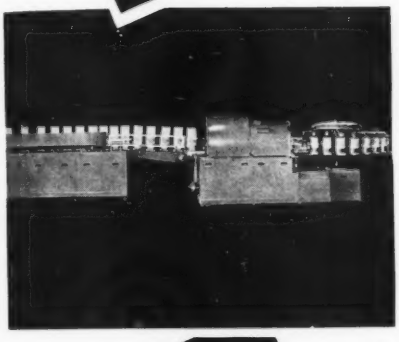

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3

ECONOMIC DEFENSE IS A VITAL STEP IN OUR NATIONAL PROGRAM . . .

Is your plant mobilized to meet the threat of rising production costs . . . more aggressive competition . . . narrower margins of profit? With the rapidly increasing business tempo throughout the U. S. A., . . . with more and more men being drawn from industry to bolster our national defense . . . manufacturers must look to their own defenses if they are not to lose ground to more alert competition. Good strategy demands the careful study of methods and machines . . . the elimination of wasteful and obsolete methods . . . the addition of modern machinery to give equal or better "fire power," or production, at lower costs. In the field of packaging, Consolidated stands ready, as always, to help you reach your objective thru soundly engineered, thoroughly tested and honestly built packaging machinery.

1 CAPEM

AUTOMATIC SCREW CAPPING EQUIPMENT. Designed to handle any type of modern cap or closure. Sorts, feeds and applies practically any size screw cap, broken thread cap, shallow or deep-skirted cap of metal or plastic to any type of container at any required speed.

2 *SEALTITE*

SEALTITE PASTED CLOSURE EQUIPMENT FOR SMALL BAGS. A Sealtite closure gives added sales appeal to any paper bag package. Uses any make of gusseted bag. Shows surprising reductions in packaging costs.

3 HOEPNER

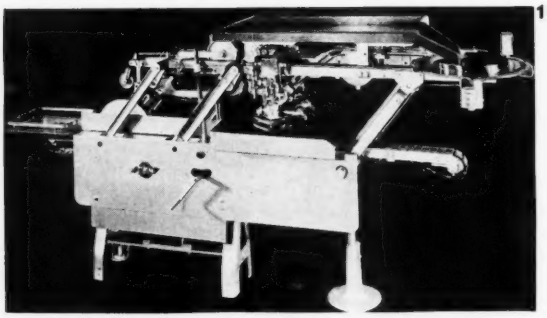
AUTOMATIC SCALES, BAG CLOSERS AND FILLING MACHINERY. Sugar, salt and all types of heavy chemicals, as well as grains and feeds of every description are weighed accurately and economically on a wide variety of completely automatic equipment.

Consolidated has never indulged in indiscriminate machine development, but has concentrated a generation of packaging experience toward fewer and more flexible types. The same sound company policy is in effect today. Basically right engineering design and unexcelled performance continue to keep the Consolidated standard high.

CONSOLIDATED
PACKAGING MACHINERY CORP.

1400 WEST AVE. BUFFALO, N.Y.

XUM



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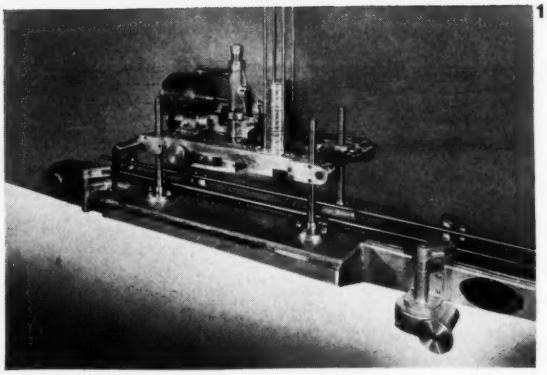

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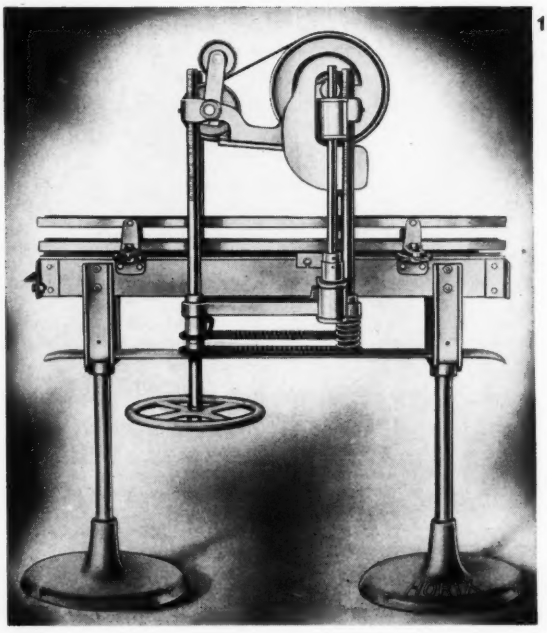

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12. Adjustable vacuum-pry-off cap sealing machine for jars from 3 to 12 in. high and 1 to 8 in. in diameter. Photo courtesy Crown Cork and Seal Co. **13.** Adjustable steam vacuum capping machine for jars from 2 to 10½ in. in height. Courtesy Anchor Hocking Glass Corp. **14.** Cork depressing unit. Photo courtesy Horix Manufacturing Co.

Vacuum Sealing

In general, the result of the use of vacuum is that the action of oxygen as a destructive agent is retarded to a point where, for all practical purposes, it is non-existent. These advantages may be summed up as follows:

1. The prevention of rancidity of oils and fats contained in food products. Even though this deterioration may take effect slowly, it is difficult to foresee how long a package may remain on a dealer's shelf and even slight rancidity is enough to adversely affect flavor.
2. The elimination of discoloration due to oxidation. No product that is "off color" is either appetizing or saleable.
3. The preservation of delicate flavors and aromas. This is particularly true where a mechanical vacuum is used.
4. The retarding and practical elimination of the growth of mold and yeast. The rapid multiplication of these micro-organisms is dependent on the presence of air.
5. The effective reduction of the corrosive action of acids and other chemical properties of food products. Corrosion is a process of oxidation and hence is effectively stopped by the decrease of oxygen content of the package through the use of a vacuum.

In general, there are two types of sealing machines for the application of metal caps under vacuum-mechanical and steam. In the mechanical type, there are two styles. One effects a vacuum seal by means of a vacuum pump and the other creates a vacuum by means of a piston arrangement built in the machine itself.

Mechanical vacuum types of sealing machines are available in a variety of styles, ranging from the simple, hand fed types to the completely automatic styles. These machines are designed to apply caps, under vacuum, to jars, tumblers and bottles.

The development of vacuum by the displacement of air with steam provides a unique and highly important characteristic in that the vacuum is formed after the closure has been applied, thus preventing the sucking out of a cold packed product from the container or the boiling over of a hot packed product. Mechanically, the steam vacuum system is simple. No vacuum pumps are used. All that is required to successfully operate the system and the capping machine are a steam supply and electrical current.

While the primary purpose of the steam is to displace the air from the head space, it also serves a secondary function in that it sterilizes the cap and creates a sterile atmosphere for the capping operation. In general, the speed of the machine may be adjusted to the convenience of the packer and the machine can be set into packing conveyor lines. Most varieties are readily adjustable for differing sizes and styles of jars or tumblers and for varying sizes of closure. Regulation of the degree of vacuum—with the steam types—can be governed by the amount and temperature of the steam atmosphere. With the mechanical types, such regulation is effected by adjustments of the pump controls.

COMPLETE MASTERY of ACCURACY IN "SPOT-SHEETING" ASSURED AT LAST, THRU BECK SHEETING EQUIPMENT

CONTROLLED BY ELECTRIC EYE

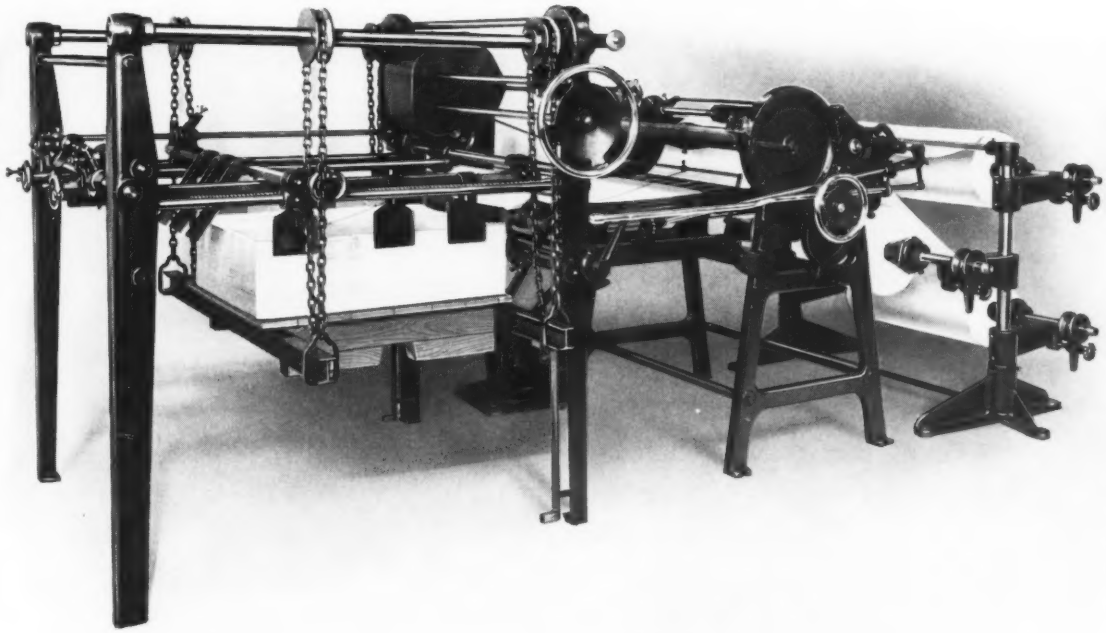
- The inescapable penalties of waste and loss through the carelessness in human control is done away with for good and all times, through the unfailing performance of the photo-electric cell, which sees the error, correcting it before the sheet is cut and the damage done.

LOWERED COSTS

- become definitely established because of waste elimination and uninterrupted production.
These machines equipped with SHEET-PILER & AUTOMATIC LOWERING TABLE, are now in operation in the countries foremost plants, for cutting at high speeds almost every conceivable type of material, from rolls or bolts into rectangular pieces or sheets.

WE INVITE ALL

- whose sheeting problems seem unsurmountable, or whose profits seem sapped by such operations, to make use of our over-three-quarters-of-a-century's experience in research in this type of work. Such long years have schooled us in the needed mechanical knowledge to create equipment, basically correct for solving your most difficult sheeting problem.



PRECISION TAPERED ROLLER BEARINGS and BALL BEARINGS throughout. MODERN PRESSURE LUBRICATION through ALEMITE FITTINGS.

RAZOR BLADE SLITTERS & REWINDERS for CELLOPHANE

- and other transparent packaging papers. Makes a dustless cut, with highly polished edge. Tension on individual strips produce hard and beautifully wound rolls irrespective of condition of parent roll.

We also build SHEAR-CUT SLITTERS as well as DISC CUTTER SLITTERS for other classes of papers, metal foils, etc., etc.

BECK "DEMI" SHEETER

- A small and less expensive Sheeter, designed for consumers of Cellophane, etc., who seek a rugged little machine for accurate work, and performance free from "break-downs," yet at a relatively smaller capital investment. Like the large sheeters and slitters, this machine is ball bearing equipped too.

CHARLES BECK MACHINE COMPANY

13th at Callowhill Street **Philadelphia**

XUM

Labeling Machines and Devices

Broadly speaking, there are four different methods which underlie the principles used in the design of modern labeling machines.

(1) Adhesive is applied to "pickers" which in turn carry the label from the bottom of a hopper to the package. The label is clamped to the package, the pickers detach themselves from the label and then pressure is applied so that the adhesive which remains on the label from the pickers causes the label to be attached to the wall of the package.

(2) Adhesive is applied to a rubber pad. This pad is brought in contact with the package and then the label in turn is brought in contact with the adhesive-covered surface of the package, after which pressure is applied to form the union.

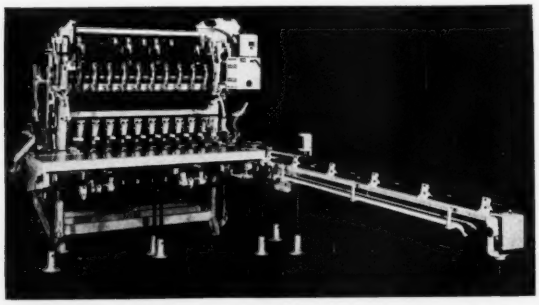
(3) The label is fed by pneumatic means from a hopper, passed over an opening where a spraying apparatus applies the adhesive. By the same pneumatic means, the label is then carried to the package and applied. Pressure is exerted to complete the attaching.

(4) The label is fed from a hopper by means of a pneumatic platen, which rigidly holds the label over its entire surface in a flat condition and carried tangentially over a twin roller gumming mechanism where a uniform film of adhesive is rolled onto the label. By the same pneumatic means, it is carried and attached to the article, after which pressure is applied to insure firm adhesion.

As is natural with almost all mechanization, the modern labeler is offered in both semi-automatic and fully automatic models, the difference being broadly as to whether the package is brought to the applying station manually or mechanically.

Methods 1 and 4, mentioned before, are employed for semi-automatic or hand-fed machines, whereas all four methods are used in the automatic labelers.

Semi-automatic or hand-fed labelers on the market today are capable of offering the user capacities from 30 to 60 labels per minute. The production, however, must of necessity depend on the article itself, on the dexterity and application of the operator and the plant management in bringing the articles to, and carrying them away from, the machine. In the majority of cases, this is done by conveyors running in front of (but not interfering with) the operator, or alongside of the attendant. Inspection and packing should be done immediately after the operator removes the labeled article from the machine and, in the choice of the labeler, this feature should be strongly considered so as to eliminate unnecessary and costly handling charges. Some labeling machines have an extremely wide range of adjustability, being capable of handling labels from the size of postage stamps up to panels $6^1/_2$ in. sq.



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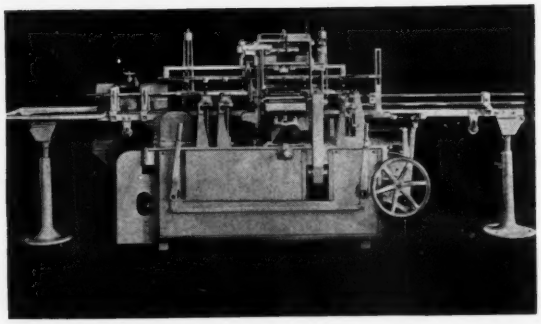

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Cross References: Tin Packages and Cans, page 232; Glass Bottles and Jars, page 256; Printed and Lithographed Labels, page 300; Types and Functions of Adhesives, page 474; Package Printing Machinery, page 490; Surface Coatings, page 502.

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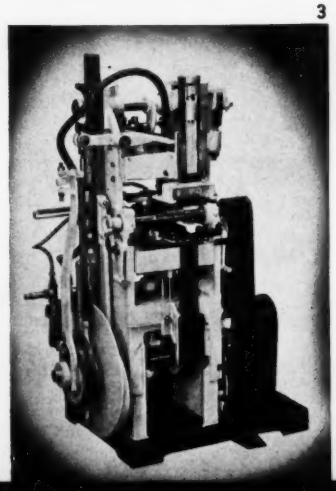

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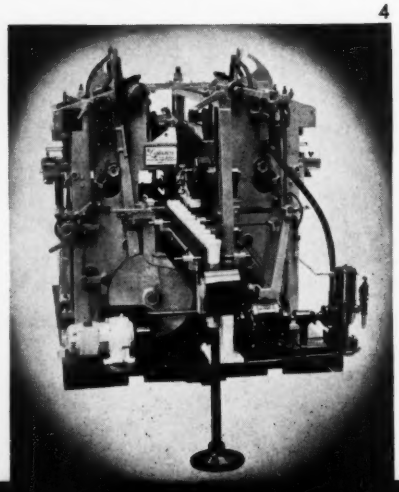
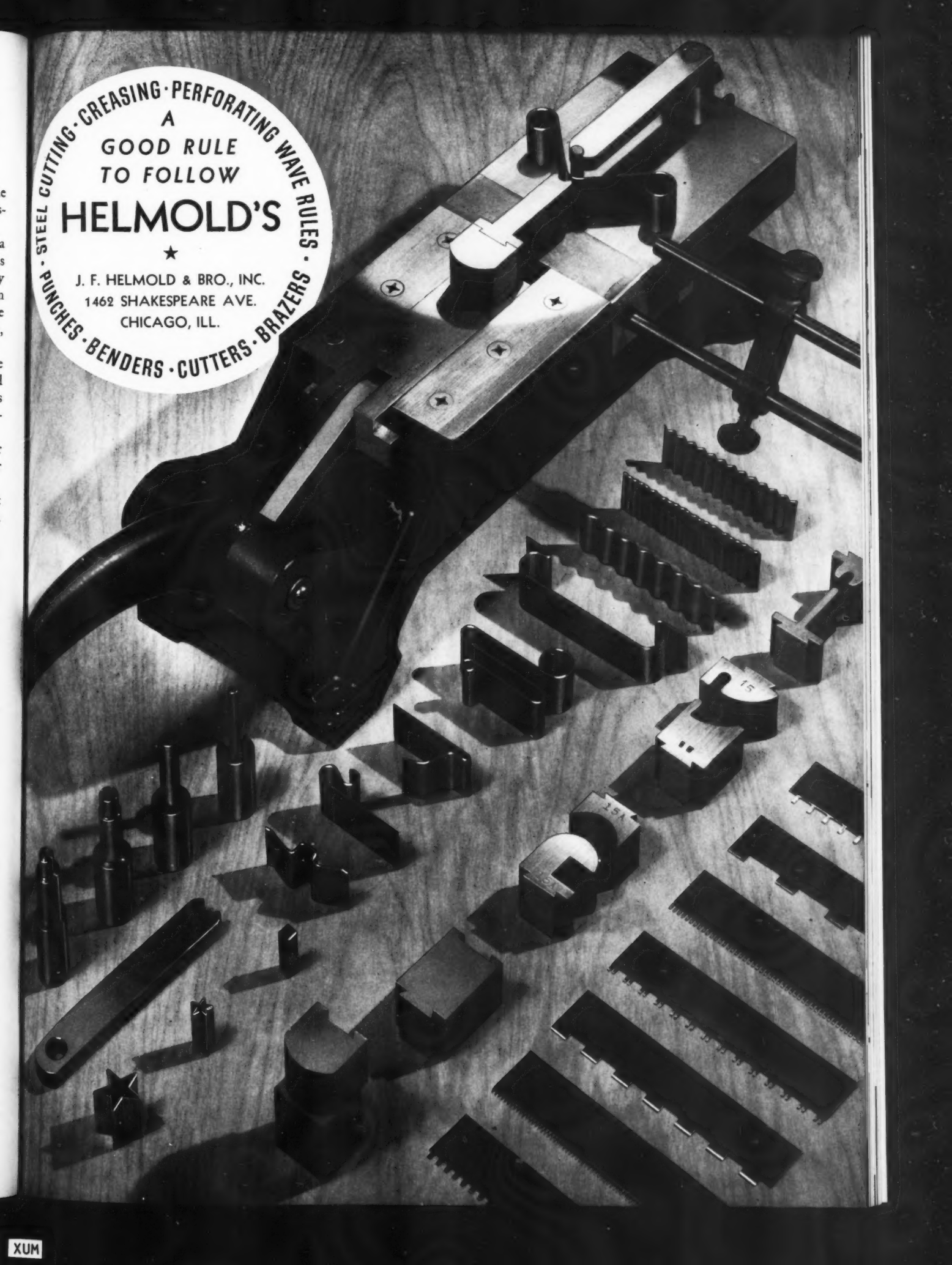


1. Ten-wide straight-line multiple automatic labeler. Labels ten bottles simultaneously. Courtesy Edward Ermold Co. **2.** Automatic straight-line labeler applying front and back labels or neck labels to round, flat, square, oval or panel containers. Courtesy Economic Machinery Co. **3.** Hand-fed semi-automatic labeler. Foot pedal controlled. Courtesy New Jersey Machine Corp. **4.** Fully automatic duplex labeler for applying front and back labels simultaneously. Courtesy New Jersey Machine Corp.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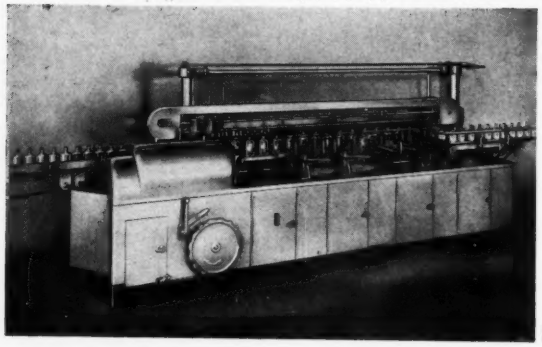
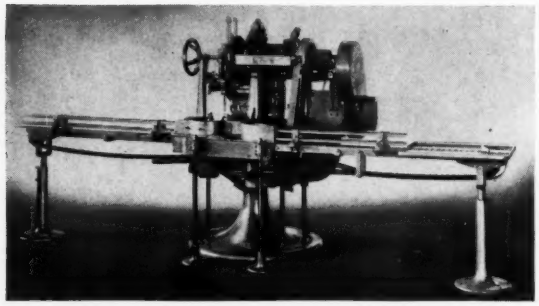


5

5. Duplex labeler with full automatic spotting device. Can apply front label or front and back labels simultaneously. Spotter device automatically rotates bottles and applies labels in fixed location in relation to molded design or raised letters. **6.** Automatic rotary labeler for applying front and back labels, body and neck labels or foil. Courtesy Economic Machinery Co.



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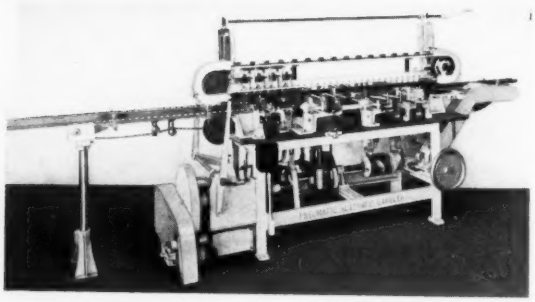


7

There are semi-automatics on the market capable of applying more than one label onto the package at one time and applying the foil onto the neck of the bottle, as used in the "soft" drink industry. They are capable of handling articles which the larger and faster fully automatic machines could not be capable of, such as delicate perfume vials, serum tubes and other highly fragile articles; also the handling of such items as cartridge fuses and battery tubes.

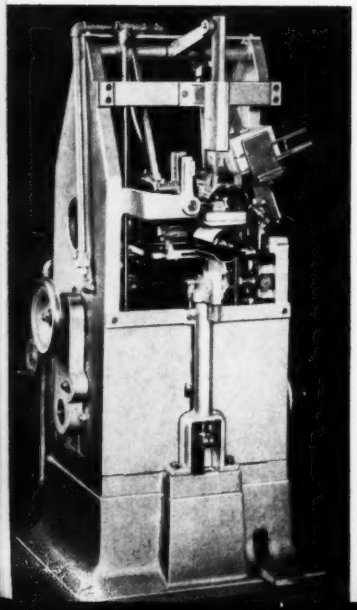
The labeling of paper boxes with paper or paper-backed foil labels or heavily embossed metallic seals, the manufacture of greeting cards, calendars, photomounts, the labeling of cigar boxes, wooden articles, attaching of paper handles to drinking cups, certain types of transparent material to folding box windows, etc., can be accomplished by some of these semi-automatic models.

Automatic labelers can be segregated into three divisions: (1) the rotary type, (2) the straight-line type and (3) the straight-line multiple type.

The rotary type of fully automatic labeler uses method No. 1 and method No. 4 for the application of the label and, as mentioned under the semi-automatic heading, it is also capable of applying two or more labels simultaneously, together with the foil neckband if desired. Consequently, it is particularly adaptable wherever round bottles, irrespective of their size, are used.

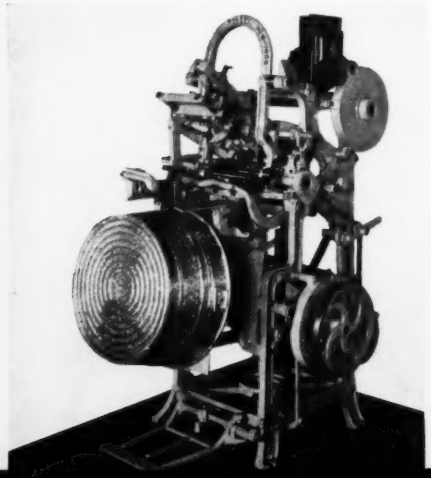
The bottles are taken from a conveyor by means of a star wheel or similar mechanism and timed through the machine. They are automatically ejected onto a conveyor and led away from the equipment to be inspected, packed or stored. They can attain speeds of 85 to 90 per minute.

The straight-line type, being of more recent design, can be used more universally as its construction allows a wider latitude in the shape of the containers and greater accuracy in the "spotting" of the label. All four methods described above are used in the feeding and attaching of the labels. Further, their design allows the adhering of front and back labels simultaneously and, by duplexing (i.e., labeling two articles at a time), higher speeds are obtained than with the rotary type. Productive capacities of 120 per minute are obtainable.



7. Duplex front and back labeler for face cream jars. Courtesy Pneumatic Scale Corp., Ltd. **8.** Hand-fed semi-automatic labeler. Photo courtesy Economic Machinery Co. **9.** Semi-automatic labeler adaptable for wide range of sizes and shapes. Courtesy Edward Ermold Co. **10.** Automatic rotary labeler for applying three labels per bottle. Courtesy The Liquid Carbonic Corp.

9



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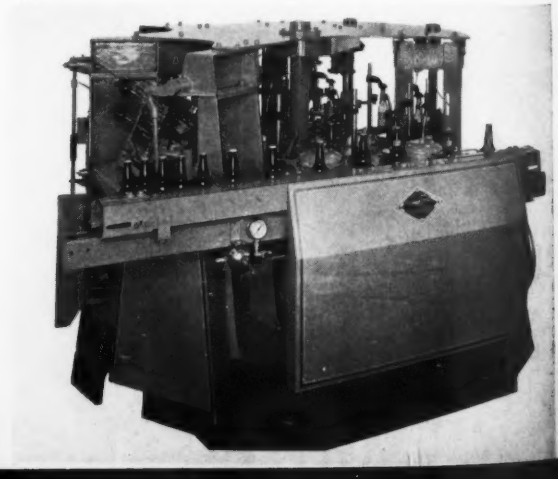

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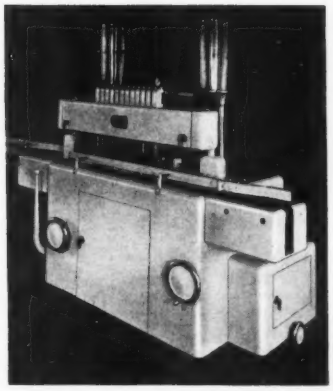
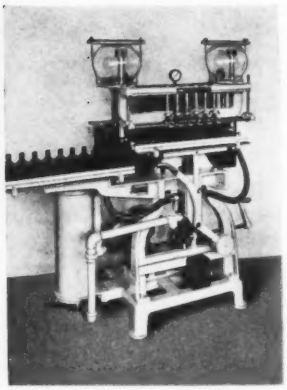
Pneumatic is the only machine builder that offers a COMPLETE LINE of Air Cleaners, Fillers, Cappers and Labelers to handle either bottles, cans or jars.

Semi-automatic inverted Bottle Air Cleaner for new glassware. Handles two bottles simultaneously.



Automatic Samco Filler—for fast, dripless filling Pneumatic builds several different machine models.



Samco Junior Filler—a flexible machine capable of handling a variety of products and a wide range of container sizes.

Semi-automatic and Fully-automatic machinery to operate at speeds ranging from 10 to 120 containers per minute.

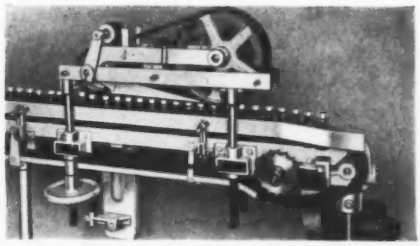
Inverted Bottle Air Cleaners

Straight Line and Rotary Fillers

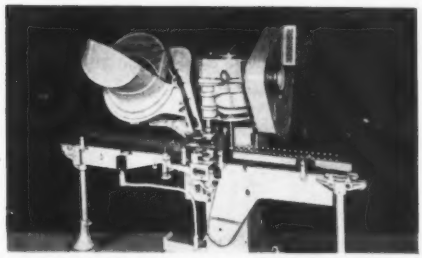
Single and Multiple-Head Cappers

Simplex and Duplex Labelers

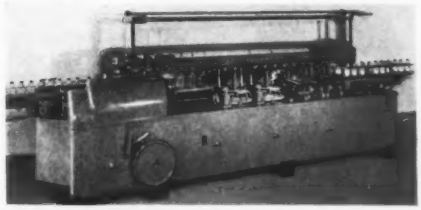
HANDLE ALL TYPES OF CONTAINERS ON PNEUMATICS



Corking Conveyor—sold either as a separate unit or as a part of the Capping Machine in cases where both capped and corked bottles are run on the same line.



Single Head Capper—one of several different models designed to handle even the most delicate caps without breakage or scratching.



Hi-Speed Duplex Front and Back Labeler. Several other models for labeling bottles, cans, boxes and jars.

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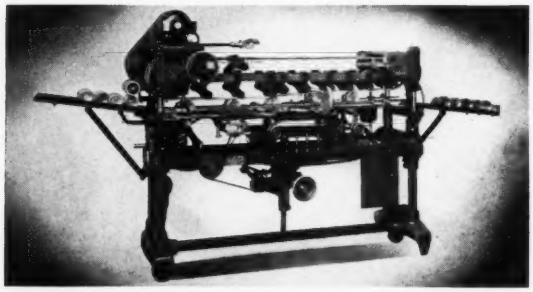

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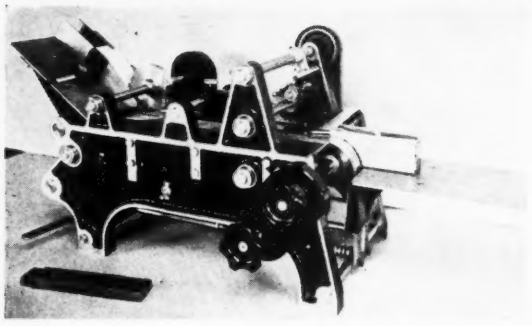

12

11. Heavy duty round can labeling machine. Photo courtesy Standard-Knapp Corp. **12.** Small machine for printing. code numbers and symbols on labels. Courtesy The Lakso Co.

Special units are built for a wide variety of requirements, such as labeling both ends of a spool of thread, applying labels to one or both ends of a cardboard shoe box or hosiery box, applying all-around labels to rectangular spice canisters, to mention a few.

The straight-line multiple type, as its name implies, labels a group of containers simultaneously. The production or capacity is determined by the size of the group of containers labeled simultaneously, multiplied by the machine speed in cycles per minute.

Available machines of the straight-line multiple type use the "picker" method for transferring and applying body, or body and neck labels to groups of 4, 6, 8 or 10 containers simultaneously for respective capacities of 80, 120, 160 or 200 per minute; or body and foil, or body and neck and foil to groups of 4, 6 or 8 containers simultaneously for capacities of 80, 120 or 160 per minute.

In choosing the type of labeler, certain essential points should be borne in mind:

1. The type of label material to be handled—whether plain paper, varnished or lacquered, or foil labels or metallic seals.
2. Whether the label is rectangular or odd shaped.
3. The type of bottle, jar or package to be labeled.
4. Range.
5. Ease of changing from one size to another.
6. Cost of change parts and their simplicity.
7. Control of the adhesive application.
8. The cleanliness of the labeling job.
9. The accuracy of the labeling job.
10. Accessibility of the machine.
11. Productive capacity.

Round Can Labelers

The labeling of round cans, such as are used by the food, paint, soap, lubricant and other industries, presents a problem which is different from the general labeling as described above. The label as used on this package is of the "wrap around" type, the extremities lapping over each other. Consequently, for this purpose, round can labelers have been designed, both of the semi- or hand-fed and fully automatic types.

There is a distinct difference in these two types in that the former covers the label with adhesive over its entire surface, the latter applying adhesive partly to the can body and only to the glue lap of the label.

In the semi-automatic machine, the can as well as the label are introduced manually and the finished article ejected by hand as well. Production, as on all hand-fed machines, again depends on the operator, so that from 4000 to 6000 cans can be labeled per eight-hour day, the variance depending on the size of the package, the facility of bringing the work to, and taking the work away from, the machine and, as stated, the dexterity of the operator.

These machines have fairly large ranges and require no change parts, the range being self-contained. They are well adapted to small runs, frequent changes and for packages requiring the label to be adhered over the entire body surface.

In the fully automatic round can labelers, the cans roll down a track and have "spots" of adhesive applied. These "spots," when the can passes over the label hopper, pick up the label which is then wrapped around the can, the label having a glue strip applied to the lap. This glue strip forms the closing joint.

In preparing labels for these machines, to get the best results the grain of the paper should run parallel to the longest dimension.

Label Gummers

Label gummers are not truly labeling machines, for they are not used to actually apply the label to its point of final contact with the package. Their function is, rather, to apply a gummed coating to an uncoated label or to moisten a pre-gummed label and thus to facilitate hand application.

A number of types and variations are available, but all have the general characteristic of a motor drive rotating a cylinder partially immersed in, or in contact with, glue or gum or water.

Coding Devices

A number of devices have recently been developed for applying code numbers or other serial identifications to labels. These are usually punch-type machines designed for use near or adjacent to the labeler. They operate at speeds of as high as 250 labels per minute and are available in types that print or perforate. Change-over of code symbol is usually readily accomplished with but a short shut-down period.

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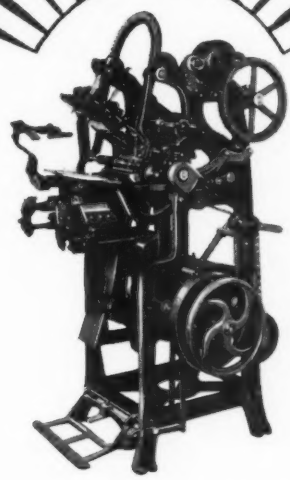
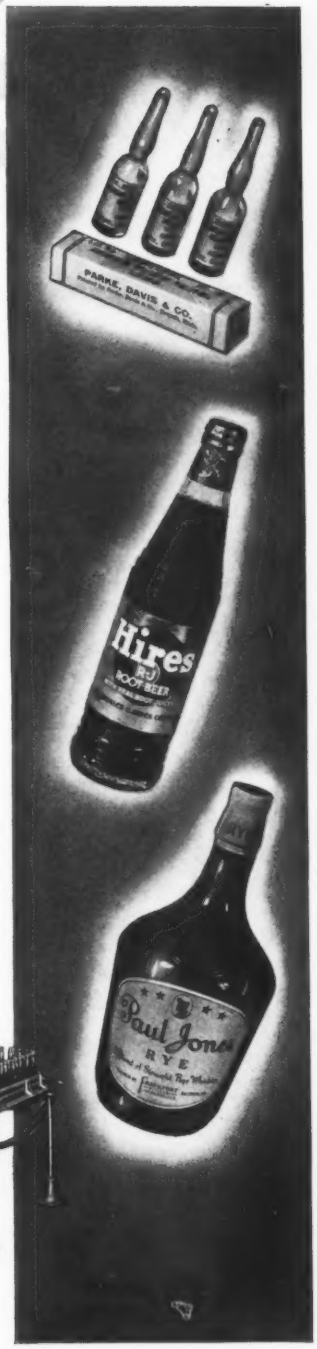
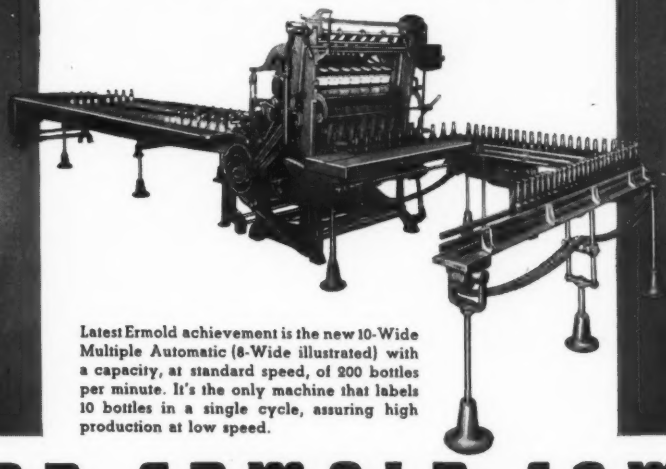
ERMOLD LABELERS





In nearly every corner of the world—wherever packages are labeled—Ermold Labelers have achieved a record for capacity, character of work, rugged construction, and high efficiency. Whether it's the fine precision required to label ½ cc ampoules—or the range needed to label pails and tubs reaching 24-inch diameter—or large outputs up to 200 bottles per minute, there's an Ermold that fits the picture. Into every Ermold is built 60 years' labeling progress.



Latest Ermold achievement is the new 10-Wide Multiple Automatic (8-Wide illustrated) with a capacity, at standard speed, of 200 bottles per minute. It's the only machine that labels 10 bottles in a single cycle, assuring high production at low speed.

EDWARD ERMOLD COMPANY

HUDSON, GANSEVOORT AND 13th STREETS · NEW YORK, N. Y.

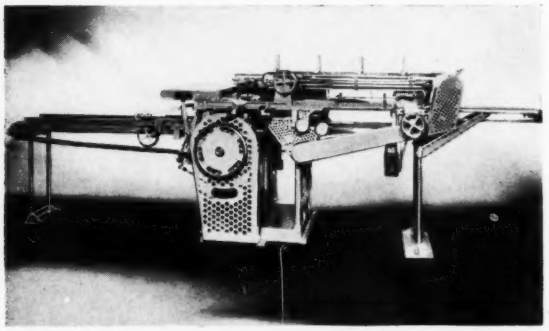
Wrapping Equipment

The wrapping of packages can be divided into two broad groups: loose wrapping and tight or wet wrapping, so called because the inside surface of the wrapper is covered with glue. Wet wrapping has taken its place in the wrapping of cartoned goods such as soap powder, salt, sugar, cereals and other food packages, because of its ability to prevent insect infestation and leakage. Nevertheless, because of its practicability and adaptability, loose wrapping has come into wide general use.

At present, more and more producers are realizing that the sales value of a package is considerably enhanced when that package is securely wrapped and sealed. In addition, this package must retain its attractiveness after the outer wrapper has been removed. The loose overwrap is the answer. Especially is this true in the confectionery trade where, in most cases, a fancy box is overwrapped in some kind of transparent material. Moisture-proof cellulose can be used where a fairly airtight, moisture-proof package is required.

When private brands for different customers are to be handled, plain cartons may be wrapped in printed materials or in unprinted wrappers and labels, for identification and appearance. The loose wrappers can be held in place on the cartons by means of thin glue lines applied automatically, which will prevent the wrappers' slipping from the cartons after they have been opened.

The loose wrap lends itself especially well to the placing of a circular or premium between the box or carton and the outer wrapper and where a revenue or tax stamp is necessary, as in the case of cigarettes. Provisions have been made on many automatic wrapping machines to make the feeding of the circular from a magazine a part of the wrapping operation.



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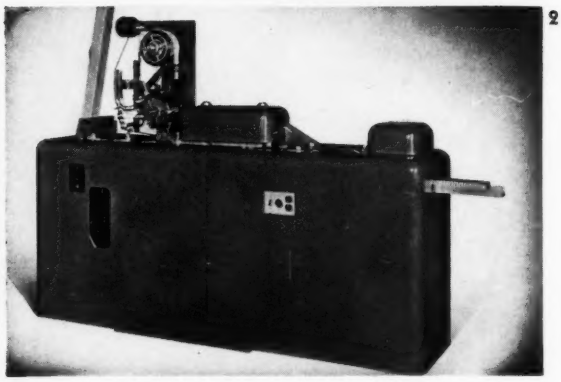

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Cross References: Protective Materials—General Considerations, page 177; Protective Foils, page 180; Protective Glassine Papers, page 184; Vegetable Parchments: Types and Uses, page 185; Transparent Wrapping Sheeting, page 188; Tight-Wrapping Equipment, page 434; Case Packing and Sealing Machinery, page 450; Types and Functions of Adhesives, page 474.

1. Automatic wrapper with temperature control mechanism for use with rubber derivative sheeting. Courtesy Package Machinery Co. **2.** Cellophane wrapper equipped with tear strip applying mechanism. Courtesy F. B. Redington Co. **3.** Heat-sealing wrapper for irregular objects as well as cartons, boats, etc. Courtesy Richard Machine Co. **4.** Machine for wrapping, double sealing and providing an opening string for individual tape bandages. Courtesy Package Machinery Co.

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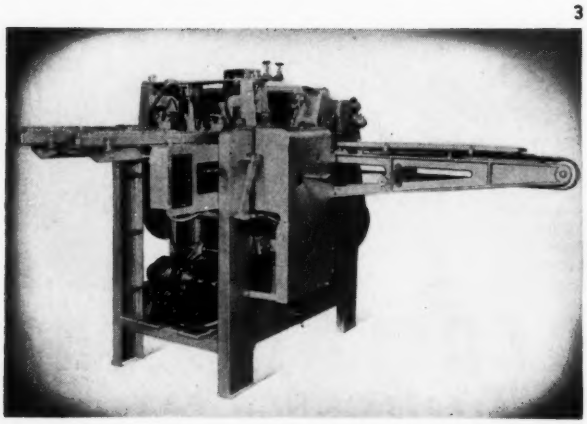

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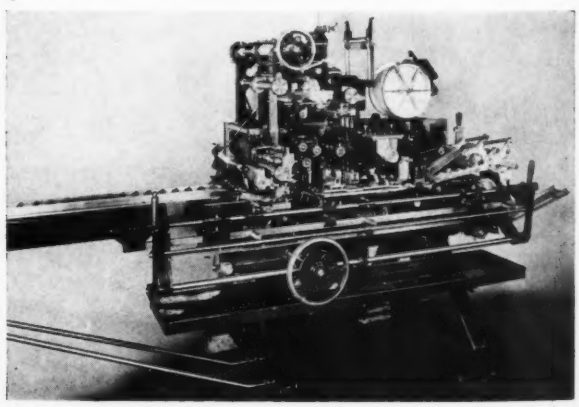

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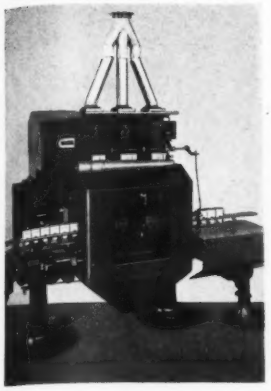
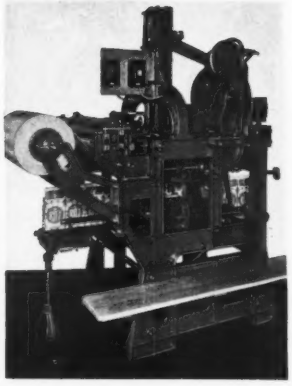
Pneumatic makes more than 80 different machine models for producing packages of all types and sizes. Complete semi-automatic and fully-automatic machine hook-ups designed to operate at speeds ranging from 10 to 100 packages per minute.



Three-Scale Net Weigher—Accuracy assured on any one of Pneumatic's 25 types of gross and net weighers.



Carton Liner—Cuts glassine, waxed or plain papers from a roll, then forms, seals and inserts the bag.

Semi-Automatic All-Purpose Weigher—A versatile machine for peas, beans, pulverized coffee, etc. in bags, tins or cartons.

PACKAGING MACHINERY FOR

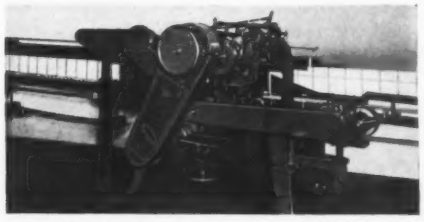
Making	Packing
Feeding	Check Weighing
Forming	Lining Closing
Bottom Tucking	Carton Sealing
Bottom Sealing	Top Tucking
Lining	Tight Wrapping
Filling	Wax Tight Wrapping
Weighing	Carton Labeling

—ALSO—

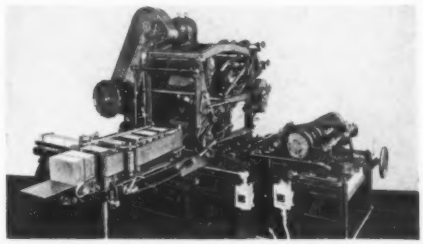
Bag Flour Packers	Can Fillers
Package Makers	Can Cappers
Shoe Box Machinery	Can Labelers
Powder Fillers	Tea Baggers

THE PACKAGING LEADERS ARE PNEUMATIC USERS

Carton Feeder and Bottom Sealer—One of more than a dozen different models for sealing or tucking the bottoms of Cartons.



Top Sealer—For glue sealing tops of cartons. Other models available for folding liners and top-tucking.



Tight Wrapper—Glues entire inside surface of wrapper to insure strong, sift-proof, insect-proof package. Other machines for handling waxed-one-side wrappers.

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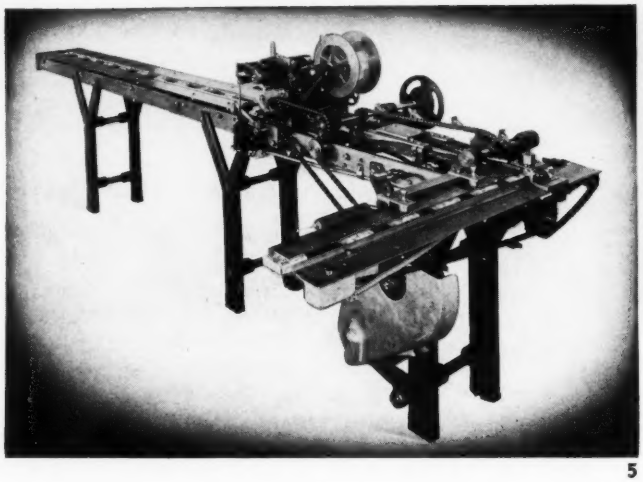

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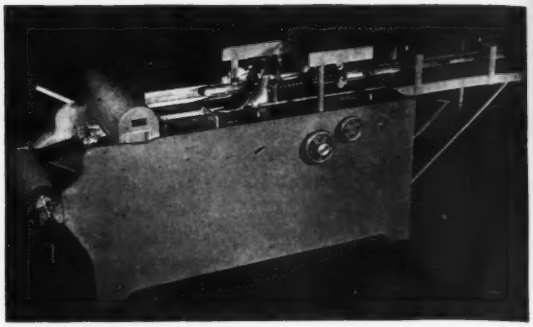

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5. Fully automatic constant speed adjustable wrapper with tear tape attachment. Output up to 400 per minute. Courtesy Scandia Manufacturing Co. **6.** Automatic banding machine. Speed up to 35 per minute. Courtesy Miller Wrapping & Sealing Machine Co.

The greatest advantage of the loose wrap is, of course, that it can come in contact with the article to be wrapped without the need of an inner protective covering. Individual pieces of candy are cut and sized on the same machine and then wrapped in transparent cellulose or waxed paper with the ends folded or twisted. Irregular pieces of chocolate candy are wrapped in foil. Many different sizes and shapes of candy bars are wrapped in cellulose, paper or waxed paper and the addition of the electric eye makes possible the use of printed wrappers in roll form. Various kinds of pops are now being wrapped in waxed paper or heat-sealing cellulose on automatic machines. Bread and cakes, too, and bars of soap lend themselves equally well to the loose overwrap, as do, also, towels, paper napkins, cigars, yeast and countless other articles.

It is only recently that the use of automatic wrapping has been considered in the frozen foods industry and here the loose wrap is necessary. A wrapper which can be heat-sealed will withstand the low temperature conditions necessary in packaging and preserving frozen foods and waxed paper or heat-sealing cellulose is used. Both of these materials are, of course, obtainable in printed roll form and the electric eye can be used to register the printed panels properly.

Other uses have also been found for carton and box wrapping machines. Automatic bundling of cartoned merchandise is a comparatively new development and is very popular with the manufacturer who is confronted with the problem of distributing his goods economically. The cost of paper wrappers is considerably less than that of pasteboard containers and the lower weight of paper as compared with the pasteboard will materially reduce shipping costs, especially where the shipping distance is fairly substantial.

Another new adaptation of box wrapping machines is the manufacture of bags of transparent cellulose material. The bags are formed on wooden mandrels and are stripped from the mandrels at the discharge end of the machine, ready to be filled. Here again, the electric eye makes possible the use of printed material in roll form. Provision can also be made to place a sticker on the inner or outer surface of the bag for identification purposes. The simple procedure of feeding the mandrel through the machine twice, without removing the first bag, will result in a double bag, of double strength. The bags produced in this way have the advantage of not being folded and stored away for long periods of time prior to use, a procedure which is claimed to weaken ready-made bags considerably. Extra parts can also be provided to permit the use of the machines as box or carton wrappers, when the bag production is not sufficient to keep the machine running at full capacity.

The advancement of machine wrapping has also resulted in the development of many new machines of a more specialized nature than those described above. Included in this group are machines for wrapping cakes of soap, bars and pieces of candy, individual cubes of sugar, cigars, packages of cigarettes, yeast cakes, fruit drops and mints and many similar articles and packages. All of the popular types of wrapping materials can be handled by these machines and, here again, electric-eye registration has been important. The wrapping operation on these machines has also been improved to decrease the amount of wrapping material needed. Especially is this true in the confectionery trade, in the wrapping of candy pops, where the use of a tight twist, heat-sealed, has decreased by about 20 per cent the amount of wrapping material needed.

While box or rectangular object wrapping is an important part of the wrapping machine art, it is only one part. For candy, machines are available to take the candy in plastic form, form it, cut it and wrap it, either with folds or with twisted ends and speeds can be attained up to 500 or 600 a minute. With twisted wrapping, the machine can be arranged so that the twisted ears can be colored and colored inserts can be put inside the wrapper. Old standbys, such as kisses or caramels, can be dressed up now in a highly attractive and salable form and, as a result, the merchandising of candy is taking on a new lease on life.

Recently the wrapping of pound and sliced pound cake in transparent cellulose has become quite prevalent

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in the East and, as a new means of merchandising cake, it is becoming popular. To do this economically, the cake bakeries have had to set up their production for automatic wrapping as the cost of large batteries of girls for wrapping the cake by hand proved too expensive. An automatic machine which accomplishes this purpose is equipped with a band-labeling attachment and cardboard inserting mechanism.

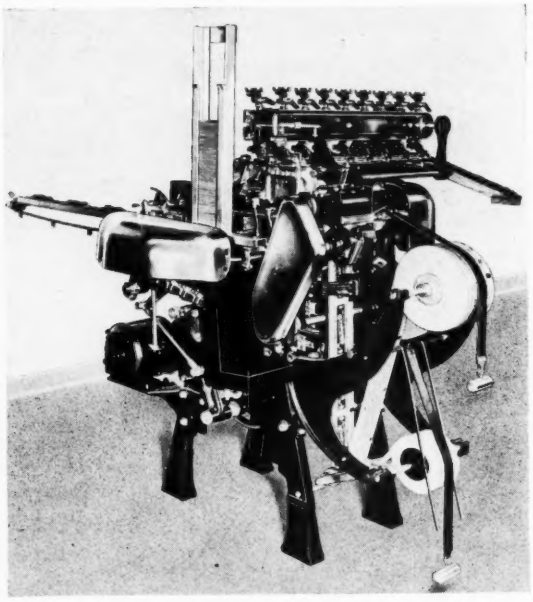
A newer development along the lines of registration is the use of a miniature printing press, using quick-drying aniline ink and geared to the paper feed of the machine. The press prints material as it is being fed from the roll into the machine. Registration is automatically taken care of, without the use of an electric eye.

The use of strong wrapping materials, such as cellulose, has resulted in the development of easy-opening devices such as tabs, tapes and machine-made nicks to facilitate the opening of the packages. Such devices are now being used extensively on such small packaged goods as cigarettes, fruit drops and chewing gum.

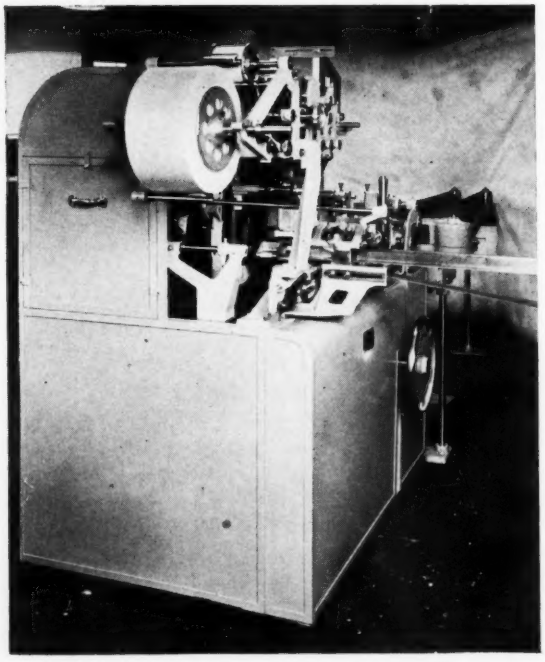
The wrapping of chewing gum is receiving a great deal of attention at present because of the development of high-speed automatic wrapping machines. A machine is now available to wrap small individual sticks of gum at a speed in excess of 600 a minute. The machine will apply an inner wrapper fed from a roll and a printed band fed in sheet form. A thin strip of adhesive will glue the outer wrapper to the inner and prevent its slipping off the end of the stick. Regular sizes of individual sticks are being wrapped with an inner roll fed wrapper and an outer printed label, at speeds up to 400 a minute.

If the individual stick wrapper and a package assembler and wrapper are used together, the complete wrapping job will be a continuous and automatic one.

In considering machine wrapping, three elements always enter the picture—speed, adjustability and price—and the three have an intimate relation to one another. The more specialized the machine, the higher is possible production, and the more difficult it is to change the size. At one extreme are the high-speed chewing gum machines just mentioned; at the other extreme are the carton wrapping machines, based on the principle of bread

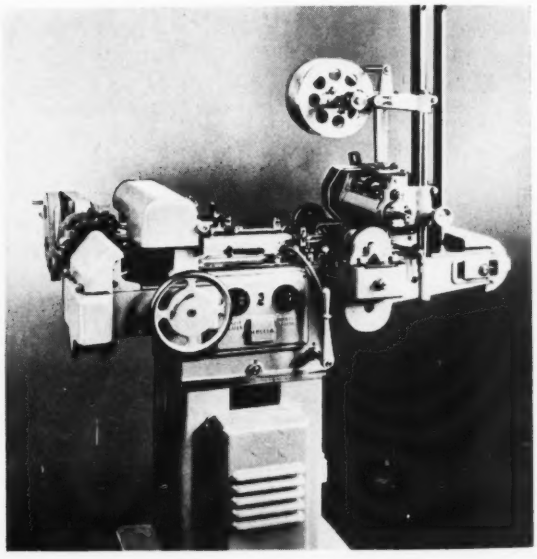


7. Machine for wrapping candy bars or other irregularly shaped and delicate products. Courtesy Modern Equipment Co.



8. High-speed soap tablet wrapper feeds either from magazine or from roll with electric eye register. Photo courtesy Package Machinery Co.

9. Full automatic constant motion wrapper runs at speeds up to 380 per minute. Courtesy Package Machinery Co.



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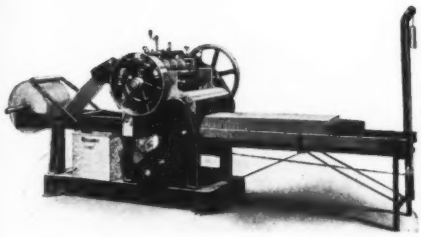
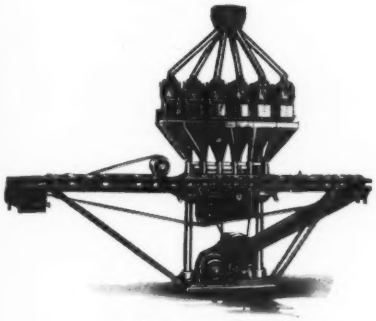


PACKOMATIC CARTON MAKING MACHINE SPEEDS TO 175 PER MIN.



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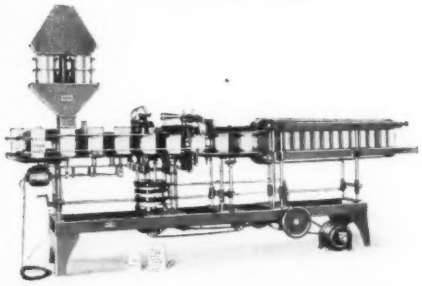
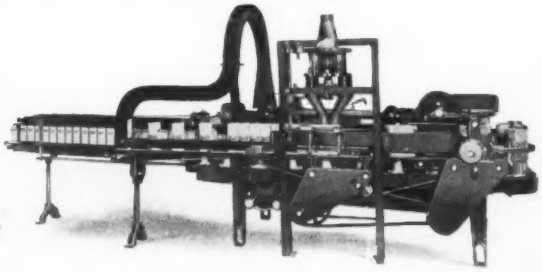


PACKOMATIC POCKET TYPE CARTON SEALER ADJUSTABLE FOR MANY SIZES



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We manufacture many different types of automatic and semi-automatic packaging machines, scales and volumetric fillers and auger packers, for low, medium or high speed production.

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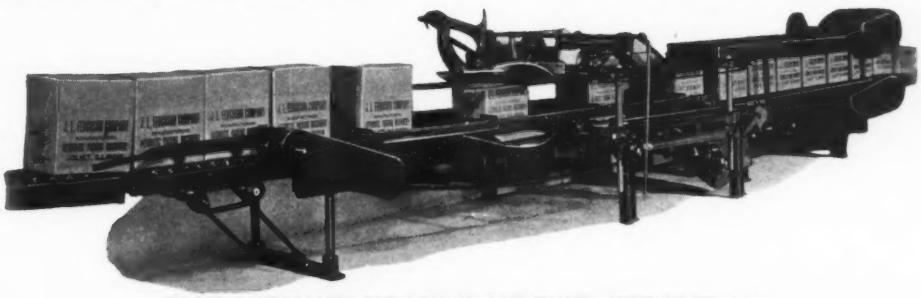

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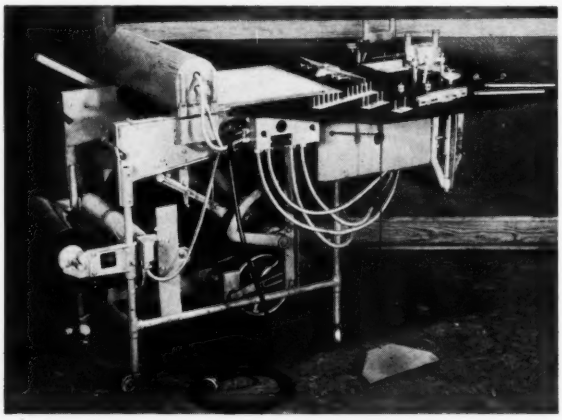
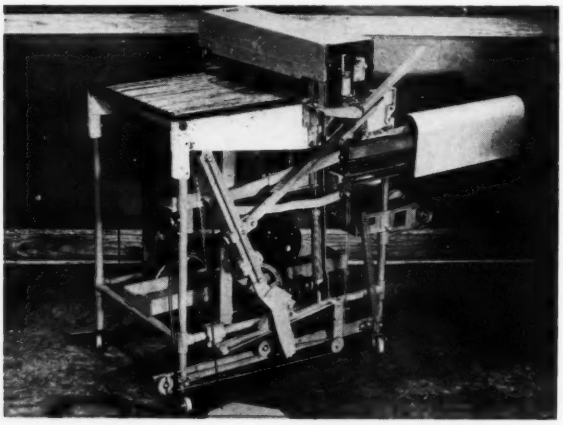


10. Semi-automatic machine designed especially for wrapping thin or flat packages with a crimped style wrap. Fixtures on table are accessories for adjustments to varying package sizes. Courtesy Miller Wrapping & Sealing Machine Co.



11. Wrapping, cutting and gluing machine. Courtesy Miller Wrapping & Sealing Machine Co.

12. Machine for wrapping irregularly shaped articles in rubber derivative sheets. The material feeds from a roll and is heated under electric plate. The product is then placed into position and twisted to form the seal. Courtesy Stokes & Smith Co.

wrappers, where a size change can be made in less than five minutes over a wide range, but whose speed is limited to slower operations.

Semi-Automatic Machines

Semi-automatic wrapping machines require a smaller investment and permit extreme flexibility with regard to size and nature of packages. This makes them valuable to both the small and large scale manufacturer. It gives the former all the wrapping equipment he needs and allows the latter an economical means of wrapping his smaller runs, producing novel packages or testing new packages on the market at little expense.

Versatility of the semi-automatic wrapping machine extends beyond mere "adjustment range." It permits the wrapping of irregular, loose or stacked items or packages, because of close contact of the operator with the folding operation. The odd package can be guided, by hand, just enough to make allowance for its peculiarities. A few examples in this category are packages composed of several loose pieces, such as four bars of soap and a wash cloth.

The semi-automatic machine will wrap with a variety of materials, either heat- or glue-sealed, including heat-sealing cellophane, waxed papers, waxed foil and the non-heat-sealing materials, such as plain transparent sheets, kraft and other ungummed or unwaxed papers. If a manufacturer of pharmaceuticals should desire to wrap his packages first individually in heat- or glue-sealing cellophane, then bundle them by dozens in kraft paper, the semi-automatic would perform both jobs, laying glue on the kraft paper to seal it.

Instant adjustability makes the semi-automatic wrapping machine suitable for very short runs. On a moment's notice, it can be changed over from the smallest to the largest package within its range. Adjustments have been so simplified that a girl operator, unassisted, can make a complete size change, without tools.

Speed of semi-automatic machines, while naturally less than those of the full automatic, is adequately high to exceed, by many times, that of hand wrapping and wrapping by means of simple fixtures and jigs. In some cases, particularly where frequent adjustment is required, or where great economies in wrapping materials are possible, the semi-automatic shows even greater savings than the automatic. Each machine has its place and they seldom overlap, so determination of the equipment indicated for any particular job is not difficult.

Packages produced on semi-automatic machines are uniformly neat and well sealed, whether with heat or glue. When heat-sealed, the hot plates are kept under thermostatic control, so that there is no injury to either the wrapper or packages. Packages containing heat perishable goods, such as chocolate, butter, icings, frozen foods and the like, can, if necessary, be passed quickly through the heat-seal region, so that a seal takes place, but the heat cannot penetrate far enough to be injurious. When glue is used for sealing purposes, the amount of flow and area of application can also be positively controlled, so that results are unerringly the

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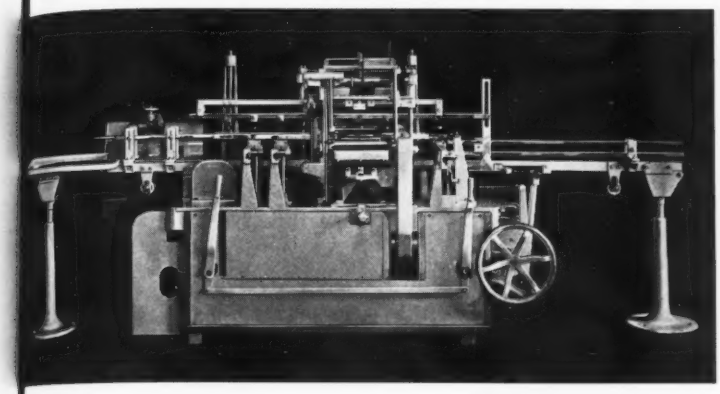
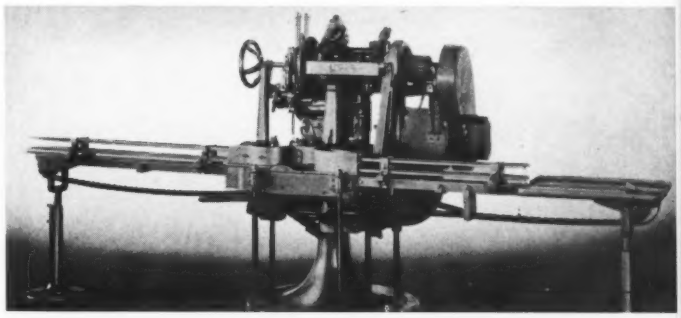


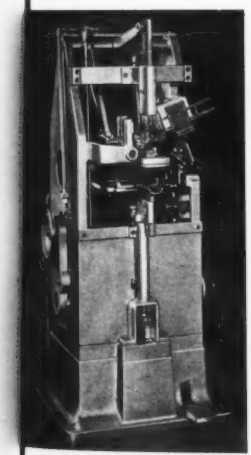
The Model HS WORLD Automatic Straightaway Labeler is available in two types — single (see picture) and double. Single models apply front labels only, double models front and back labels to flat, square, round, oval or panel flasks and bottles.

For those requiring extra speed, another Straightaway, the **Model HS High Production** applies front or front and back labels to two bottles simultaneously—attains a speed of 120 bottles per minute.

The new Model HG Straightaway is just what the doctor ordered for rapid and precise labeling of half gallon and gallon jugs and bottles.

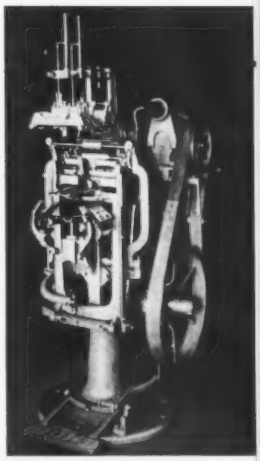
The WORLD Automatic Rotary Labeler is the World's best bet for the production labeling of all types of round bottles and jars. This sturdy, compact, full automatic labeler applies body labels; body and neck labels; body, neck labels and foil *in one operation.*





The Model CH WORLD Semi-Automatic Labeler applies single labels from postage stamp size up to 4 x 6" to bottles of every size and shape from ampoules to 4" in diameter. Its big brother, the Model CHx, handles label sizes up to 6½" square.

Write for bulletins containing complete information on the best labeler in the WORLD for your job.



The Model S Improved Semi-Automatic WORLD Labeler is the World's most flexible labeler. It labels any size bottle from small vials to gallon jugs. It applies front or back labels or labels that go all 'round the bottle; body, neck labels and foil, separately or in one operation.

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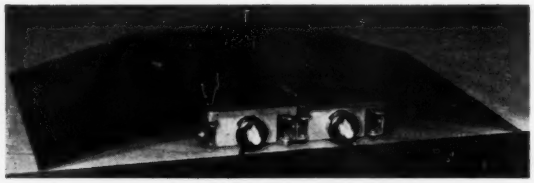

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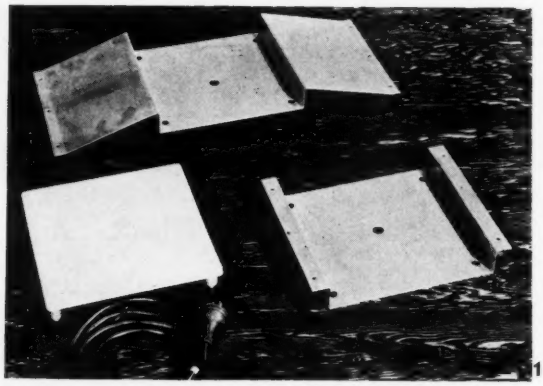

14

13. Heat-sealing plate with ramps to facilitate package movement. Courtesy Oliver Machinery Co. **14.** Heat-sealing plate with ramp and table inset attachment. Courtesy Miller Wrapping & Sealing Machine Co.

same and the machine user can have confidence in the uniformity of his product, both in appearance and protection afforded by the wrapper.

Bottle wrapping is another achievement of the semi-automatic wrapping machine. Using many of the principles of the package wrapping machine to retain the valuable feature of adjustment for many sizes, this equipment also provides a clever means of neatly tapering the cellulose wrap from shoulder to cap of bottles.

Ordinarily, the semi-automatic machine folds and seals the wrapper over the bottom and two ends of the package, in the manner that an ordinary biscuit carton is usually wrapped. However, where a very shallow package is to be wrapped, where the ends do not offer sufficient depth for a satisfactory end seal, the end folds can be tucked under the ends of the package or "underlapped." This feature is useful on flat packages, such as cake slices, sheets of writing paper and even extension edge candy boxes, which are recessed at the sides and ends so that a conventional seal is impractical.

The semi-automatic wrapping machine can also be furnished with a number of money-saving attachments, such as a coding device for perforating letters or numbers in the wrapper, or a banding attachment for attaching printed bands to the wrapper.

Hand Wrapping Fixtures

A number of simple and inexpensive tools have been developed, in recent years, to aid hand operators in wrapping heat-sealing materials. These include hot plates of various types upon which a package may be placed momentarily to achieve a seal. Where line seals or spot seals are desired, special heating irons, equipped with thermostatic controls and similar in appearance to soldering irons, are sometimes utilized.

Tight-Wrapping Equipment

Tight-wrapped packages are standard with many manufacturers and packers of food and grocery products. First adopted a number of years ago by some of the cereal manufacturers, where its greatest advantage was in keeping the weevil from getting into the contents, the tight-wrapped package has been adopted for use with many other products, such as flour, soap powders, salt, coffee, cereals, etc.

With the tight-wrapped package, the plain unprinted cartons are filled and sealed in the regular way, there being a number of different makes of semi-automatic and full automatic carton filling and sealing machines on the market. After the carton is filled and sealed, it is fed into the tight-wrapping machine which automatically feeds the paper label as the carton enters the wrapping machine, glues the label all over on the blank side with a thin coating of adhesive and wraps it tightly around the filled carton, making a perfectly tight-sealed, non-sifting, weevil-proof and attractive package.

Various types of cartons with inside bags or liners can be used with the tight-wrapped package, as well as different types of opening devices. In the salt industry, the tight-wrapped package is now being used by many of the leaders and one of the most satisfactory salt packages is a carton made of asphalt-lined board which is tight-wrapped on the outside. For coffee, wax or parchment paper liners are generally used on the inside of the carton and the cartons are tight-wrapped on the outside. For flour, the regular chipboard carton is used and some of the packers have these made with a blue lining on the inside which gives a whiter appearance to the flour. Various combinations of cartons, liners and labels can be used to insure the product getting to the consumer in the best possible condition of presentation.

The aid of Carl E. Schaeffer of the Stokes & Smith Co. in the preparation of this article is gratefully acknowledged.

Cross References: Protective Materials—General Considerations, page 177; Protective Foils, page 180; Protective Glassine Papers, page 184; Vegetable Parchments: Types and Uses, page 185; Transparent Wrapping Sheeting, page 188; Wrapping Equipment, page 426; Case Packing and Sealing Machinery, page 450; Types and Functions of Adhesives, page 474.

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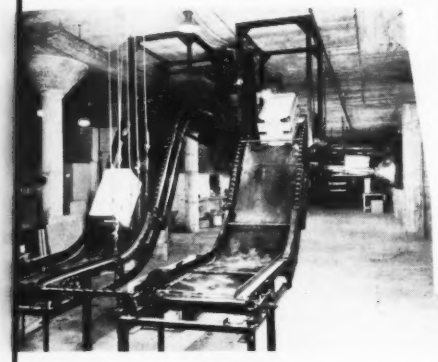

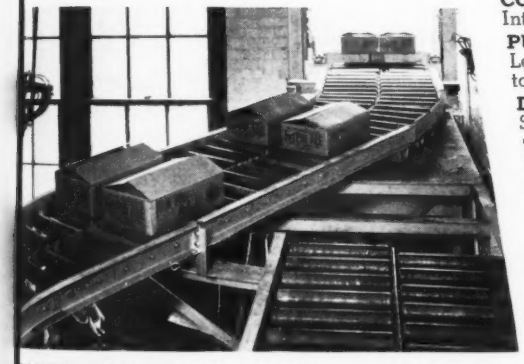

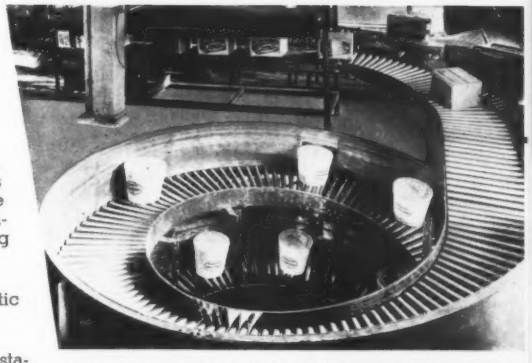

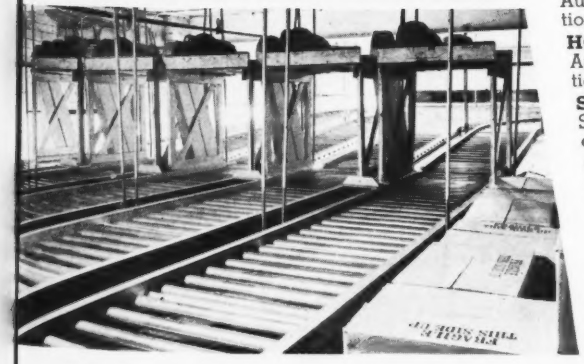

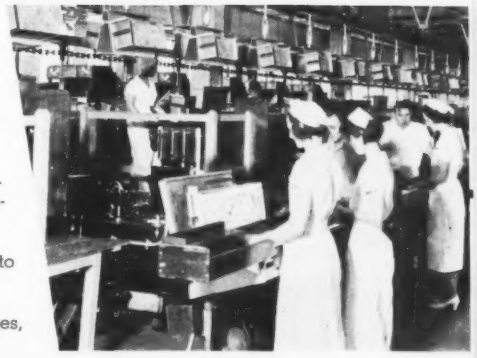

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TROLLEY CONVEYERS:
Light, medium, and heavy duty types, incorporating ball bearings or oilless bronze bushings. Bearings may be grease packed or greaseable. Attachments made to suit commodities being handled.

ELEVATING CONVEYERS:
Suspended carriage types. Automatic receive and discharge stations.

HOISTS (Electrical)
Automatic receive and discharge stations.

HOISTS (Pneumatic)
Automatic receive and discharge stations.

SPIRAL CHUTES:
Single and multiple tread, open and enclosed types.

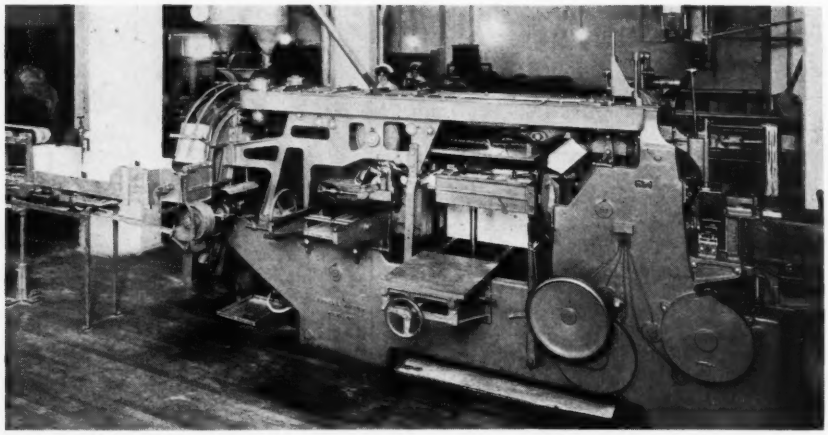
SPIRAL ROLLER CONVEYERS:
Two or three-rail construction with intermediate receive and discharge stations.

PORTABLE CONVEYERS:
Designed to specifications. Adapted to specific requirements.

PILE-ELEVATORS:
For piling sacks, bags, bales, bundles, boxes, and cartons.

THE CONTINUOUS FLOW PRINCIPLE OF HANDLING MATERIALS

XUM



1. Tight-wrapping installation at a Western milling plant. Courtesy Stokes & Smith Co.

Another advantage of the tight-wrapped package is for the packer or manufacturer who packs private label brands for different customers. If he uses the tight-wrapped package, he can use the same carton and merely have different labels for the different brands. This means a saving as it is not necessary to carry a number of different printed cartons on hand. With the tight-wrapped package, various types of labels giving different styles of end folds can be used to suit the conditions. Some labels are die-cut so that each end flap of the label is glued down separately. Others are rectangular, making a gusset fold on the end.

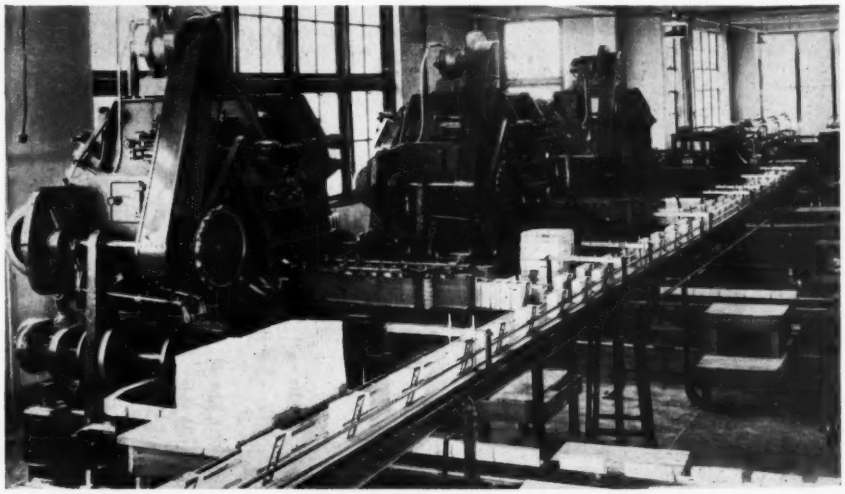
Varnished Tight Wraps

Recently the varnished label has been adopted by a number of packers and manufacturers using the tight-wrapped package and the package tight-wrapped with the varnished label makes an ideal container for many food and grocery products. The varnished surface makes the package attractive, the colors show up to advantage and the varnished surface will not accumulate dirt or dust as quickly. Also, the package is more moisture-proof as the varnish gives the extra coating on the outside. Another variation of the tight-wrapped package is the one wrapped with a metal foil wrap. In this case, the labels are made of metal foil laminated on paper so that the outside of the label is the printed metal foil and the inside is paper which can be glued uniformly to the carton.

Another recent development combines the advantages of tight-wrapping and wax-wrapping at considerably lower cost. This is accomplished by printing and waxing only one side of the sheet of paper and gluing the underside to all four sides and top and bottom of the plain carton. This development has been made possible through the perfection of electric-eye methods of registration which permit roll-feeding of the printed and waxed stock. Roll-feed and electric-eye registration can also be applied to regular unwaxed tight wrappers and this is an advantage because roll-printing is less expensive than printing in sheets.

Adhesives

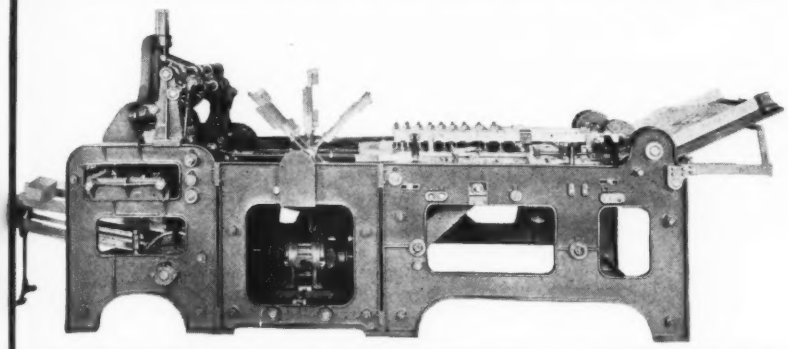
Various kinds of adhesives can be used to suit the requirements. For the ordinary paper tight-wrapped packages, a cold vegetable dextrine adhesive soluble in water is used. For varnished and foil wraps, there are several kinds of moisture-proof adhesives and also latex adhesives on the market.



2. Battery of tight-wrapping machines delivering wrapped cartons to a collecting conveyor. Photo courtesy of the Pneumatic Scale Corp., Ltd.

U. S. AUTOMATIC machines cover the packaging field

Our machines are represented in almost every type of dry product packaging—for making boxes and cartons; for net and gross weighing, filling and packing; for cartoning candy, soap, tooth-paste, razor blades, bottles, etc. We are always interested in working out your packaging problems. If you will send us details, we will gladly and without obligation submit our recommendation of machines to suit your job, along with proposed sample package.

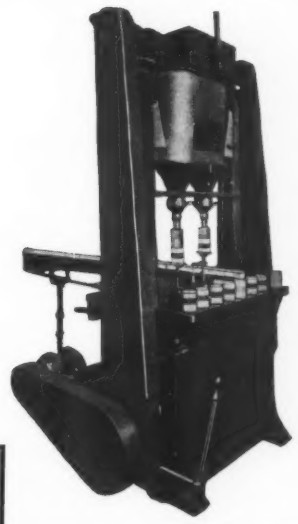


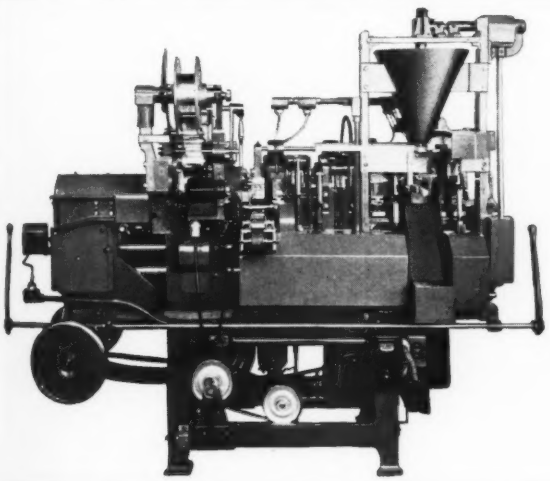
PAPER BOX MAKING

At left is our UNIVERSAL BRIGHTWOOD BOX MACHINE, a completely automatic model for producing high grade work, such as shoe, candy and hosiery boxes with turned-over ends and double side-walls. It will also handle the regular single wall boxes, such as are produced on our widely known STANDARD BRIGHTWOOD BOX MACHINES.

GROSS WEIGHING, PACKING and VOLUME FILLING

Illustrated is our MODEL MH BOND FILLING MACHINE, one of our many machines for handling all types of granular and powdered materials. This semi-automatic model can be equipped as a volume filler, weigher or packer-weigher, and will produce up to 50 packages per minute. We also have other semi and fully automatic models, all guaranteeing the same close accuracy and practically dustless operation. We will be pleased to recommend the most suitable model for you if you will send us samples of the product and containers, and give us an idea of your production requirements.





PACKAGE FORMING, FILLING and CLOSING

This is our MODEL W-18-1 which produces envelopes from rolls of printed or plain foil, Pliofilm or other heat-sealing material and fills them with powdered, granulated or tablet products. The machine forms a completely air-tight and moisture-proof package, and therefore is suitable for packaging individual servings of food, beverage and drug powders, and other products of a hygroscopic nature. We can also furnish carton forming, lining, filling, closing and wrapping units for many different products.

UNITED STATES AUTOMATIC BOX MACHINERY CO., INC.

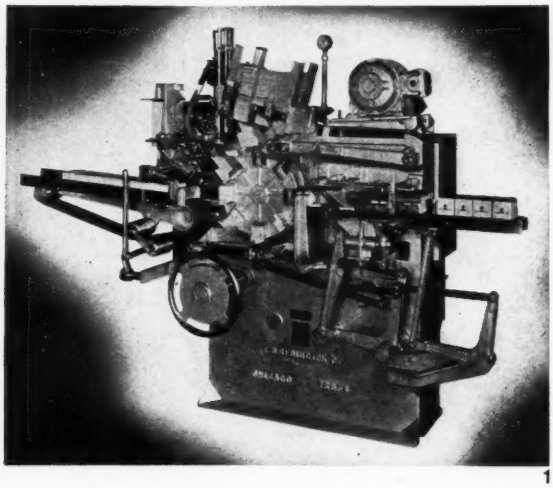
owning and operating

National Packaging Machinery Co. — Cartoning Machinery Corp.

18 Arboretum Road (Roslindale), Boston, Mass.

Branch Offices: New York, Chicago, Cincinnati

XUM



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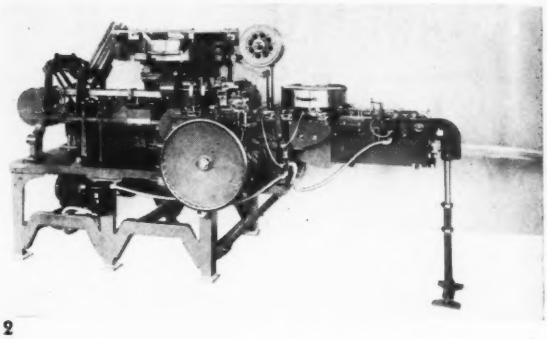

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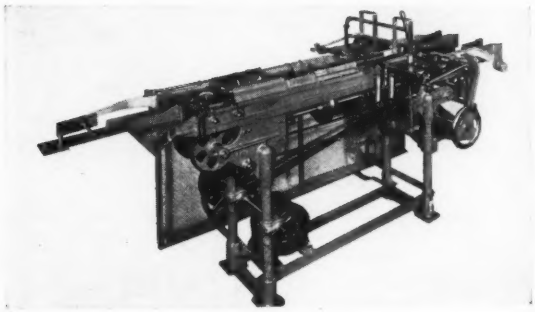


3

1. Machine places oleomargarine prints plus insert material into cartons. Photo courtesy F. B. Redington Co. **2.** High-speed cartoner for small packages erects cartons, tucks bottom, fills, tucks top and wraps with transparent cellulose fed and cut from a roll. Courtesy U. S. Automatic Box Machinery Co., Inc. **3.** Carton folding and closing machine taking filled cartons off conveyor line. Photo courtesy Peters Machinery Co.

Carton Loading and Closing Equipment

The term "cartoning machinery," as used in this article, refers to machines designed to open or erect cartons, to place therein one or more units of the product itself, or a bottle, jar, tube or other package unit or units, plus supplementary printed matter, if desired, and to then close the carton into the form in which it will appear when placed on the dealer's shelf.

Whether or not a prospective purchaser of cartoning machines or a producer of cartoned products is warranted in planning for the use of cartoning machinery, depends upon a number of factors. First, of course, there is the matter of the number of packages he is required to produce daily or weekly. Secondly, there is the nature of his package. Some cartoned products can be packaged quite economically by hand. Others, because of their more involved nature, are prohibitively expensive to produce by hand. The best procedure involves the submission of packages to carton machinery suppliers who can, after a study of all the factors involved, recommend either an existing machine in their lines or advise as to the possibility of modifying one of these machines.

In general, there are two types of cartons that are handled by automatic cartoning machinery. Most commonly used is the tucked carton equipped with top and bottom flaps which are tucked into position by the fingers of the cartoning machine. The other type is what is known as the glue end carton. This is used in cases where tamper-proof seal is desired or where the weight of the product would open the bottom tucks of the tucked type. In some instances, cartons are used with a combination of glued flaps at the bottom and tucks at the top.

The variety of cartoned products is tremendously broad. Packages of razor blades stand, perhaps, at the small end of the size scale. From this point, they range upwards to the large cartons used for macaroni or for cleansing tissues.

The efficient speeds at which cartoning machines now operate depend to a great extent on the nature of the product to be handled and the size of the package. Several well-known five-cent packages of candy coated chewing gum, containing twelve tablets, are automatically produced on machines that operate at speeds of 100 to 160 packages per minute. Safety razor blades are automatically counted out and cartoned at speeds as high as 240 packages per minute. Bars of soap and similar products are automatically cartoned at speeds of 150 or sometimes more per minute.

Cross References: Folding and Display Cartons, page 35; Specially Processed Cartons, page 68; Package Inserts, page 314.

Acknowledgment is here made to Charles L. Barr of the F. B. Redington Co. for aid in the preparation of this article.

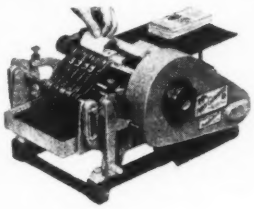
FOODS • BEVERAGES • DRUGS • COSMETICS • TOILETRIES • CERAMICS • HARDWARE • ETC.

Labeling

Bottles • Jars • Flasks • Jugs • Ampules • Boxes • Products • Packages • Tip-ons • Etc.

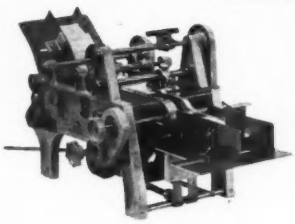
FINER PRODUCT APPEARANCE—AT LESS COST—WITH LESS LABOR!

GLUE-APPLYING for HAND LABELING:

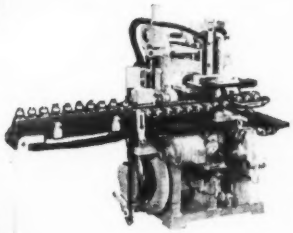


The PACEMAKER Table Gummer has long years of service "built in" because of substantial construction. It's ideal for short runs, speeds up your labeling by its fast feeding, and is "self-cleaning"! Five sizes, 6 inch to 27 inch width.

IMPRINTING OF CODE-SYMBOLS:

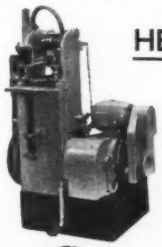


At long last we have developed the CODE-O-MATIC for printing stock or control numbers on labels; handles a wide range of label sizes, and is fully automatic.



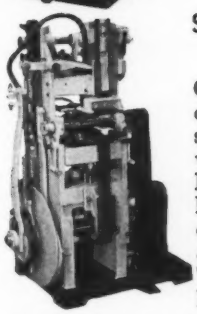
Three different types of fully automatic LABELRITES are shown here!

HEAT-SEAL LABELING:



The THERM-O-MATIC Labelrite applies labels without glue, using thermally treated papers or labels; a semi-automatic unit, for labeling products, and containers.

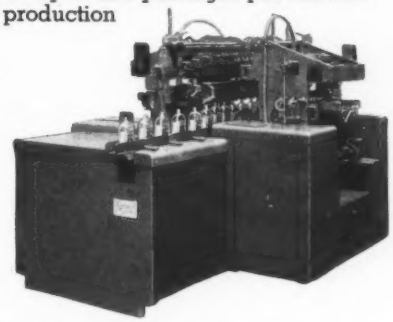
SEMI-AUTOMATIC PONY LABELRITE



Over 700 of these fast, and accurate Labelrites have been installed in every type of plant where labeling is necessary. Petty cash change-parts, full label gluing, quick, easy change, 60 per minute capacity and self-cleaning. Handles from 7/16" x 7/16" up to 6" x 6 1/2" labels.

FULLY AUTOMATIC LABELRITES:

These high-speed production units handling wide range of sizes, are marvels for precision work. They label one or both sides, at speeds up to 120 packages per minute. Adaptable to all line production methods.



ALL LABELRITES FEATURE

Perfect Register

No Bottle Wiping

60 or More per Minute

Glue to very edge of label

Write for Catalog!

NEW JERSEY MACHINE CORPORATION

1616 Willow Ave. Hoboken, New Jersey

Chicago Office • 549 West Washington Boulevard

SALES and SERVICE REPRESENTATIVES in principal cities.

~ and The MOTOAIR PUMP!

VACUUM, PRESSURE, or both is the service offered by the *Motoair*—built in one integral unit, with its own visible oiling system. Made in a range of sizes for use on packaging, filling, printing machines or other individual requirements. Write for comprehensive catalog!

XUM

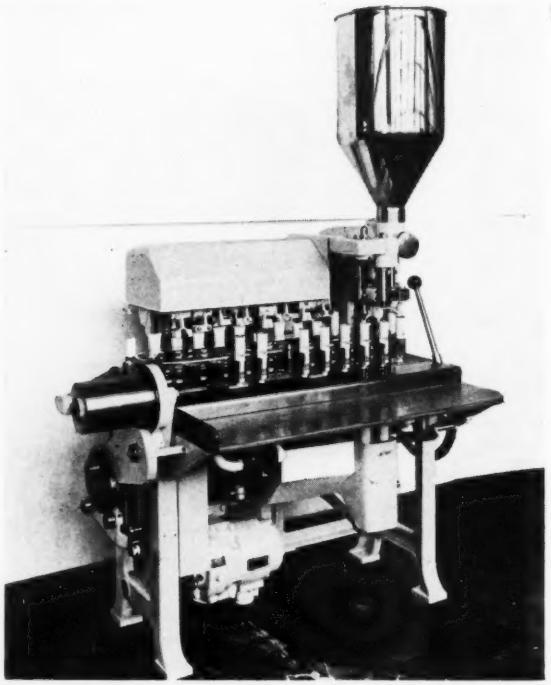
Collapsible Tube Filling

The selection of tube filling equipment depends on three important factors: first, the consistency of the material; second, the range of tube sizes; third, daily production.

Liquids and semi-liquids that are self-leveling and will flow by gravity are the least difficult to handle as the material will run into the tube from the top, will fill uniformly and will be free of air bubbles. Furthermore, the material can be easily fed to the hopper of the machine and will flow down through the hopper, by gravity, into the filling mechanism. Tooth pastes, shaving creams and similar materials that will not flow by gravity must be filled by placing the filling nozzle down into the bottom of the tube and filling from the bottom up to prevent air pockets. In most cases, the filling pump will pull the material down into the hopper, but if the material is "short" and breaks apart, an impeller type agitator must be used to force it down through the hopper. Creams, ointments and similar pastes that will not flow by gravity can sometimes be made to flow by warming them. The machine, in this case, is equipped with a jacketed hopper and an agitator to keep the material at a uniform temperature and it is also equipped with heated filling parts. Before adopting this method, it is important to determine whether the material shrinks on cooling, as any shrinkage will draw the walls of the tube in and give it an empty appearance.

Acknowledgment is made to F. J. Stokes, Jr., of the F. J. Stokes Machine Co. for cooperation in the preparation of this article.

1



2

The majority of the machines on the market will handle tubes up to $1\frac{1}{2}$ in. in diameter by 6 in. long and many of them will handle tubes up to $1\frac{1}{2}$ in. in diameter by 7 in. long. Hand operated equipment will handle somewhat larger tubes, but the semi-automatic and automatic machines must be modified to handle tubes over 7 in. in length.

The production requirements will, of course, determine whether hand operated, semi-automatic or full automatic machines should be used. All three types are available and range in capacity from 100 or less tubes per hour up to 7000 an hour.

Machine Types

A complete outfit for filling, closing and clipping collapsible tubes may be purchased for as little as $275 and will put up from 10 to 20 tubes per minute, using three operators. Two types of hand operated filling machines are available, one for liquids and semi-liquids and the other for pastes. Both are easily adjustable and both

Cross Reference: Collapsible Metal Tubes, page 250 and General Considerations in Machine Installation, page 378.

1. High-speed filler designed to fold the tube and, after filling, apply a welded seal. Photo courtesy The Karl Kiefer Machine Co.

2. Tube filling, folding and crimping machine. Photo courtesy Arenco Machine Co., Inc.

Exact Weight Scales *Helping* INDUSTRY *Package the Goods...*

SHADOWGRAPH

The SHADOWGRAPH is a revolutionary advance in precision weighing. A light ray replaces mechanical indication to allow reduction in working parts thus producing greater accuracy and speed. Noiseless in operation—instantly ready to weigh by plugging into any electrical outlet. Featuring extremely fine sensitivity SHADOWGRAPH is dependable and accurate in any high speed modern packaging operation.

Model 1021 (below) is designed for carton, box and can packaging and weighing. Ideal for candy, lard, broken eggs or any product packaged to exact weight. Equipped with a top reading dial for floor or low bench operation. It requires no leveling for uneven floors. Comes with carrying handles for easy transportation in the plant. Sensitive to ¼ oz. Capacity to 53 lbs.

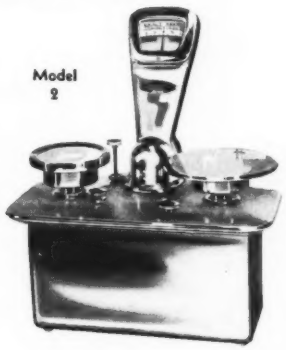
Model 1021

PRODUCTS—Quality pre-determined weight scales for modern packaging, checkweighing, controlling automatics, hand weighing.

EXACT WEIGHT Scales are the acknowledged leaders in the pre-determined weighing field. More than 50,000 corporations and companies in 53 industries from coast to coast use this equipment for checkweighing, controlling automatics and hand weighing on every type of production line in modern packaging.

Model 233

Model 233—Features Tu-way tower and backset dial with slant tower indication; combines accuracy and speed performance for checking automatic machinery; extremely short platter fall (⅛") which cuts scale depreciation. Sensitive to ⅛ oz.—Capacity to 3 lbs.



Model 2

Model 2—Features fully enclosed case and oil sprayed mechanism. Built of brass, bronze, stainless steel and chromium treated for full corrosion treatment to withstand live steam, cold rooms, lactic acid and other severe conditions found in creameries, milk plants, cheese factories and ice cream plants. May be countersunk if desired. Sensitive to ⅛ oz. over and underweight —Capacity to 3 lbs.

Model 273

Model 273—End tower construction completely changes all standards by which modern high speed over and under weight scales are to be judged. Features—Short platter fall which multiplies operating speed and this feature materially reduces scale depreciation—compactness—less space on the bench—fits any production line—uninterrupted straight line production across the scale—heavier construction for added ruggedness. Sensitive to ⅛ oz. Capacity—12 lbs.

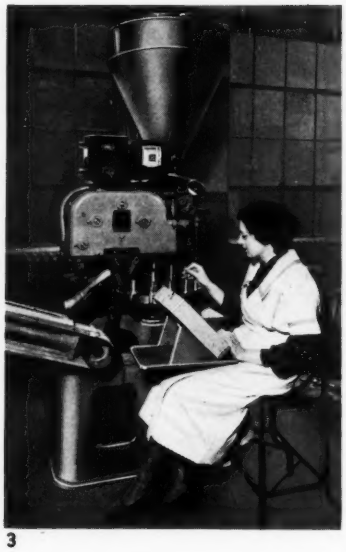
Model 1120

Model 1120—Features tower inclined at angle of 30 degrees—revolves to face any direction required by the operation. For heavy duty packaging ...checkweighing. Rugged... built to stand hard abuse, yet light in weight (130 lbs.). Equipped with carrying handle on each side; low weighing platform (6½" from floor) Aluminum platform 17" x 12"; open construction to permit easy cleaning. Sensitive to ¼ oz. at full weighing capacity — Capacity to 150 lbs.

THE EXACT WEIGHT SCALE CO.
223 W. Fifth Ave. Columbus, Ohio

THERE IS NO SUBSTITUTE FOR EXACT WEIGHT
INDUSTRIAL PRECISION SCALES

XUM



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3. Machine for handling liquids, ointments or pastes at a rate of 25 tubes per minute. One operator. Courtesy F. J. Stokes Machine Co. 4. Automatic filling for tooth pastes, shaving creams, etc. Fills, closes and crimps. Courtesy Arthur Colton Co.

fill the tubes as accurately and as cleanly as do power-driven, automatic equipment. The filled tubes are then transferred to a small, hand operated folding machine which applies a double fold or which can be furnished to apply the quadruple fold. A third operator indents the folds such as on clipless closures, or clamps on a clip, by means of a foot operated press. Certain models can be equipped with electrically heated jaws for applying the hermetic seal described below.

A production of about 30 filled and sealed tubes per minute can be had by using a general purpose filling machine and then transferring the tubes to a second machine which folds the ends and seals them. Two operators are needed. In the case of liquids, it is possible to put a filling attachment directly onto the folding and sealing machine, in which case one operator can fill, fold and seal up to 30 tubes per minute. These machines can be equipped with variable speed drive, so that the speed of the machine can be adjusted for individual jobs.

For the manufacturer who has a varied line of products, a completely automatic tube filling, closing and sealing machine is available which will handle up to 50 tubes per minute with one operator. This machine will handle both pastes and liquids, since the tubes are raised up over the filling nozzle and are filled from the bottom up. The machine can be set to make a plain double fold, a quadruple clipless fold or the hermetic seal. The operator simply places the tubes into the tube cup and registers them so that the trade mark or printed matter on the tube will be in proper relation to the fold. Ejection is automatic onto a conveyor.

A full automatic machine is available with four filling heads capable of filling up to 120 tubes per minute. This machine automatically removes the tubes from the shipping cartons, registers the printed matter by means of a photo-electric cell and fills, closes and discharges.

Bottom Closure

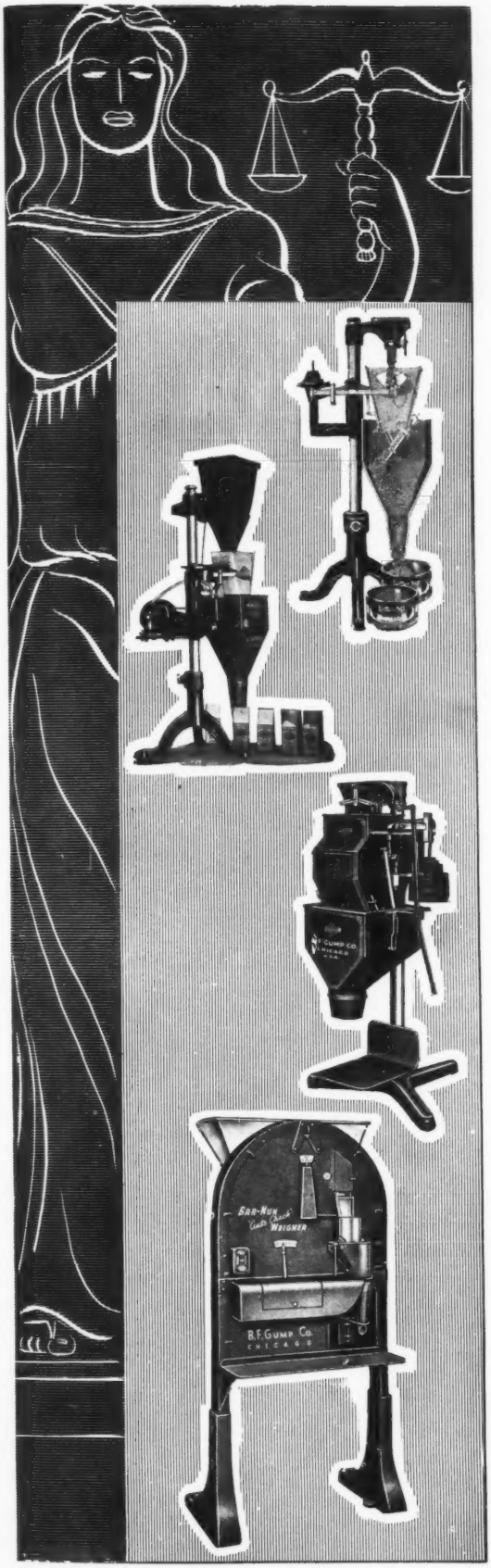
The simplest type of closure is a plain double fold. This is neat and attractive in appearance and is sufficiently strong for materials, such as rubber cement and glues, that automatically harden and prevent further seepage in the event they leak through the fold. It is also satisfactory for thin pastes and similar materials that are easily extruded and do not strain the fold when forced out of the top of the tube. This double fold can be strengthened considerably by indenting the metal.

The so-called clipless closure consists of a quadruple fold, reinforced by corrugations. The ten layers of metal that result are as strong as a clip and considerably more resistant to seepage and leaks.

When the tube is folded, the walls come together and give the tube a wedge-like appearance. The volume of the tube is reduced considerably and the material is forced up toward the fold. For this reason, tubes must not be filled more than about $^3/_4$ or $^7/_8$ full.

The ordinary double and even quadruple fold is reasonably tight, but many materials quickly seep through and either corrode the tube or give it a very unattractive appearance. Many methods have been devised to seal the tube absolutely tight, with varying degrees of success. One method is the hermetically cemented closure. The tubes are coated, on the end where the fold is made by the tube manufacturer, with a special transparent cement. The tubes are filled and folded in the usual manner on regular equipment, but the crimping jaws are electrically heated and when the fold is corrugated by them, the heat fuses the cement and produces a tight seal.

Another tube sealing method, available on a patented machine of one manufacturer, uses a welding process to seal the tube walls together. This, it is claimed, permits a saving of up to three-quarters of an inch of material on each tube.



FROM AS LITTLE AS 1/4 oz., up to 75 lbs. PER DISCHARGE

THERE'S AN EDTBAUER-DUPLEX or BAR-NUN TO MEET PRACTICALLY EVERY WEIGHING REQUIREMENT FOR DRY, POWDERED OR GRANULAR MATERIALS

FOR FREE FLOWING MATERIALS

Edtbauer-Duplex Gravity Feed Automatic Net Weighers, Nos. 1, 2, 3, and 4 are recommended for weighing all materials of free flowing characteristics such as whole bean or coarse ground coffee, cereals, cornmeal, scratch feeds, granulated sugar, salt, rice, etc. They are accurate, speedy and simple to adjust from one weight to another. Four sizes offer a range for weighing from 3 ounces to 75 pounds per discharge.

FOR NON FREE FLOWING MATERIALS

Edtbauer-Duplex Power Feed Automatic Net Weighers, Nos. A0, A1, A2, A3, and A4, are highly efficient for weighing non-free flowing materials such as finely ground or pulverized coffee, cereals, cornmeal, pancake flour, rolled oats, mash feeds, chemical powders, calcimine, plaster, mineral fertilizer, etc. Five sizes offer a range for weighing from 1 ounce to 75 pounds per discharge.

NO. 10 . . 1/4 OUNCE TO 8 OUNCES

Bar-Nun "Auto-Check" Weighers fill, weigh, and automatically check weigh small packages with extreme accuracy, all in one operation. Accuracy is guaranteed within $\frac{1}{64}$ of 1 ounce plus or minus on pulverized or granular products.

NO. 15 . . 2 OUNCES TO 2 POUNDS

Similar to the No. 10 models, except larger, for handling weights from 2 ounces to 2 pounds per discharge. Speed ranges up to 30 per minute with accuracy guaranteed within $\frac{1}{32}$ of one ounce plus or minus. Check-weighing pointer and dial and beam with positive weight settings, are features of these sturdy, accurate weighers.

THE COMPLETE LINE OF GUMP WEIGHERS

No. 1. Edtbauer-Duplex for weighing 3 oz. to 1½ lbs.
No. 2. Edtbauer-Duplex for weighing 4 oz. to 3½ lbs.
No. 3. Edtbauer-Duplex for weighing 5 to 15 lbs.
No. 4. Edtbauer-Duplex for weighing 10 to 75 lbs.
No. A0. Edtbauer-Duplex for weighing 1 to 8 oz.
No. A1. Edtbauer-Duplex for weighing 3 oz. to 1½ lbs.
No. A2. Edtbauer-Duplex for weighing 4 oz. to 3½ lbs.
No. A3. Edtbauer-Duplex for weighing 5 to 15 lbs.
No. A4. Edtbauer-Duplex for weighing 10 to 75 lbs.
No. 10. Bar-Nun "Auto Check" for weighing ¼ oz. to 8 oz.
No. 15. Bar-Nun "Auto Check" for weighing 2 oz. to 2 lbs.

WRITE TODAY . . . GET COMPLETE INFORMATION !

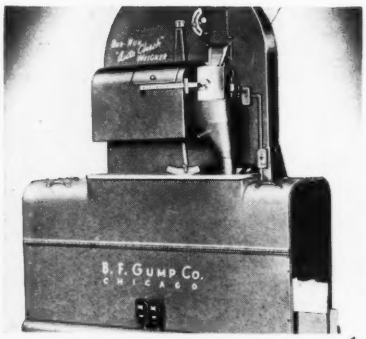
B.F.Gump Co.

ENGINEERS AND MANUFACTURERS SINCE 1872

445 SO. CLINTON STREET CHICAGO, ILLINOIS

XUM

Bag Filling and Sealing

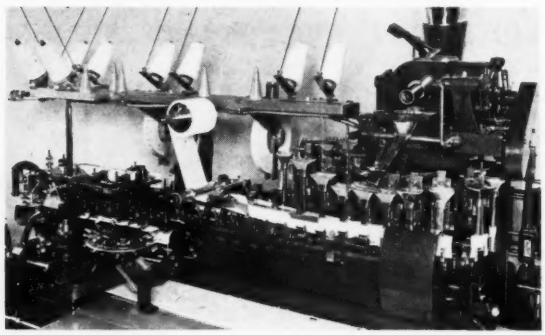


1

1. Automatic bag feeder, opener and weigher. Speed 30 bags per minute. Courtesy B. F. Gump Co.

Automatic equipment for the efficient closing of stiff containers such as has been available for many years, formerly made it almost imperative for the large producer of packaged goods to seek some form of stiff container, either a can or carton. Although the cost of these containers was considerably higher than that of paper bags, the saving in production cost frequently more than equalized the excess cost of the package itself. Thus, in most cases, the bag remained the unit for only the small producer who utilized all hand operations or combined hand or semi-mechanized bag opening and sealing operations with semi-mechanized or automatic filling operations.

Cross References: Paper Bags: Types and Uses, page 204; Bag Closing and Sealing Methods, page 212; Heavy Duty Multiwall Paper Bags, page 222; Bags: Special Types, page 228; General Considerations in Machine Installation, page 378; Weighing and Filling Dry Products, page 381; Box and Bag Stapling Equipment, page 445; Bag Making Machinery page 462



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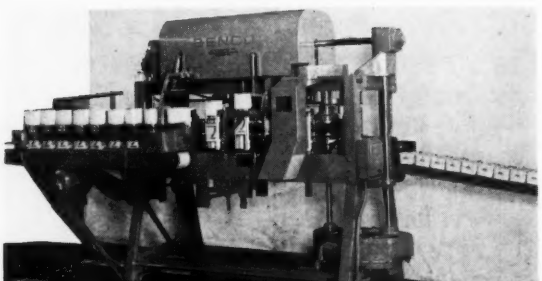

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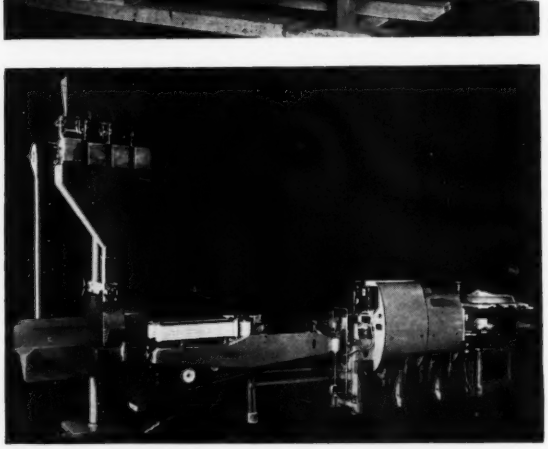


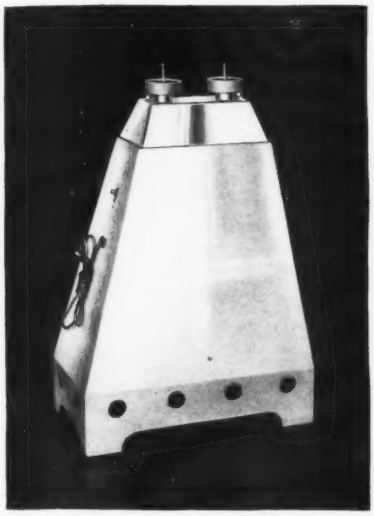
4

2. Tea bagging machine which forms fabric bags, fills them, sews closure and applys string and tag. Courtesy Pneumatic Scale Corp., Ltd. **3.** Bag closing machine handling folded gusset bags, adding tin tie and sealing same. Courtesy Benj. C. Betner Co. **4.** Automatic weigher in line with automatic closing and sealing machine. Extensively used for sugar and similar products. Courtesy Consolidated Packaging Machinery Corp. **5.** Duplex bag packer and weigher (in background) feeding to bag sealing machine. Courtesy Stokes & Smith Co.

5

MACHINERY OF ENGINEERED-DESIGN

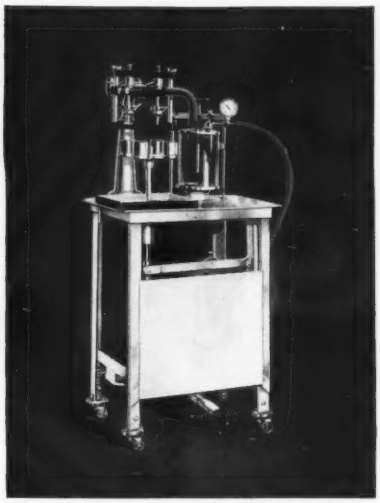
ILLUSTRATED directly below are three (3) units of our manufacture out of a complete line of bottling and packaging machinery that comprises over 150 different styles, types and sizes of machinery. The complete line of bottling and packaging machinery, as engineered and manufactured by this organization, includes Washing, Washing and Draining Machines and Washers and Dryers in straightline, rotary and revolving types, Air Cleaners, Direct Pressure, Gravity and Vacuum Filling Machines, in straightline and rotary types, Conveyors, Stills, Filters, Cappers, Corkers and miscellaneous kindred equipment. The scope of the complete line of machinery can best be expressed by stating that prices on individual units range from a minimum of $1.75 to a maximum of $15,000 per machine.



2-TUBE AIR CLEANERS

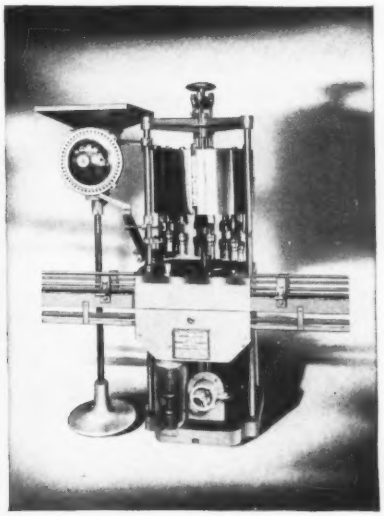
MODERATE in cost, efficient in action, requiring but little floor space, with a cleaning speed of 30 to 45 containers per minute, this two-tube air cleaner does an efficient and low-cost job of thoroughly cleaning containers before they are fed to the filling machines. The cleaning tubes are normally furnished in brass, nickel-plated, and 10 tubes in all (5 sets of 2 each) will take care of the entire range of containers to be cleaned, including all types, styles and sizes of neck finishes and sizes of containers. All sizes of tubes are interchangeable. Bottles are cleaned when they are in an upside-down-vertical position, where natural gravity, combined with man-made compressed air, does the job of cleaning rapidly and efficiently at a very low cost per bottle.

BOTTLING ENGINEER HANDBOOK AVAILABLE ON YOUR REQUEST



2-TUBE VACUUM FILLERS

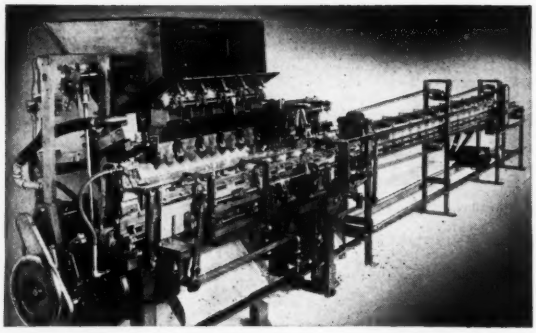
OPERATING on the vacuum principle of filling, this machine will fill 500 to 1400 containers per hour. Designed to fill directly from a 5-gallon bottle, barrel or low storage container. Not necessary to elevate the product so as to have a natural gravity flow to the machine. Two containers are filled simultaneously. Unit is semi-automatic in action. Not necessary to use filling trays, thereby eliminating a double handling of containers. Can be furnished with standard heads for filling cork or screw cap ware, or a special head can be furnished for filling all-glass-sprinkler-top-shaker bottles.



8-HEAD ROTARY CAPPERS

COMBINING large output capacity, general flexibility and mechanical simplicity, these fully-automatic cappers do a splendid, rapid and efficient closing job. Capping speeds are 60 to 120 capped containers per minute. Will handle all sizes of screw caps, ranging in size from 15 to 70 millimeters as standard. Capping chucks capable of taking both larger and smaller caps than 15 and 70 millimeters can be furnished upon special order. Because 8 capping chucks are used, the entire machine can be run at a slower speed to get 120 capped containers per minute. This slower operating speed does much to increase the total life of the capper. Capper will handle screw caps fabricated of any material, including those molded of plastics.

U-S BOTTLERS MACHINERY CO.
4032 NORTH ROCKWELL STREET • CHICAGO



6. Automatic bag feeding, weighing and filling, top folding and gluing machine. Courtesy U. S. Automatic Box Machinery Co., Inc.

Today the automatic machinery available in this field is capable of performing one or all of the operations included in the following list: bag feeding, bag forming, bag opening, bag filling, check-weighing, bag closing and bag sealing. Developed in almost every case to meet the specialized needs of a single producer or a single industry, these machines have come to form a group in themselves. Since differing machines perform differing groups of operations, no single description will cover the entire field. A perusal of the photographs and captions which illustrates this article will, however, give the reader a pretty fair idea of the possibilities inherent in such machines. The introduction of automatic bag packaging machinery has, in some industries, resulted in a surprising change in the appearance of the bag itself since the automatic machine is capable of producing a bag closely approaching in appearance the neatness and attractiveness of the finest stiff containers. With this possibility, bag suppliers and bag users have turned from the cruder forms of bag decoration to the use of the finest available forms of printing and of the more attractive and decorative outer bag materials.

Box and Bag Stapling Equipment

The use of stapling, as a means of closure for bags and boxes, has shown a great development during the past few years, furthered by the wide variety of stapling equipment that has been produced to meet specific requirements. Bag sealing with staples has grown from a spare time job of retail clerks until whole departments are now devoted to this particular operation. Whereas hand operated machines were used, and still are, power-driven staplers and stitchers are effecting great savings in the packing and shipping departments themselves.

Among the advantages of stapling as a method of closure is the fact that it is neat, secure and very fast. It does not impair the appearance of the container and the container may be used immediately, without waiting for an adhesive to set. Dampness does not cause the seal to loosen, with the danger of the contents spilling out and it is practically impossible to remove the staple and again seal the package without detection, thus reducing the danger of pilferage to a minimum.

Four types of closure are generally used in this bag sealing work. The simplest form is where the bag is merely folded over at the top and fastened with one or two staples. Another method is the use of a cardboard bag top which folds over the top of the bag and is stapled through the bag, thus making a seal and furnishing a label at the same time. Where the bag is to be folded tightly over the contents, as in the case of a coffee bag, sometimes the two sides are folded in first and then the back and front folds lapped over each other and stapled with a single staple. When a non-sift seal is desired, a wide fold is made across the top of the bag and this fold is folded again, the sides being folded under at the same time. By inserting a stapling machine under the two ends of this fold successively and driving a staple in each end, a flat top, non-sift bag is produced.

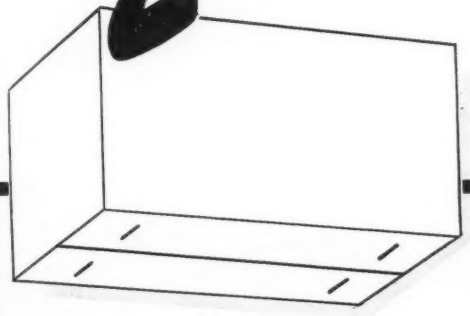
Packers of asphalt, fertilizer and other heavy bulk products, who use multiwall paper bags, have discovered that stapling is an efficient and economical means of sealing these bags, too, and bags up to 100 lbs. capacity are handled easily and quickly on equipment especially designed for this purpose.

A very recent development in packaging is the heavy kraft shipping bag, which is used as a shipping container for coffee and other items, carrying 12 or 24 1-lb. bags. This container is especially adapted to motor transportation and is widely used by packers operating their own fleet of trucks. When filled, the sides of these bags are folded in and the back and front are then folded over

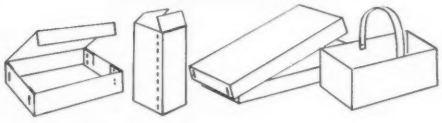
Cross References: Bag Closing and Sealing Methods, page 212; Heavy Duty Multiwall Paper Bags, page 222; General Considerations in Machine Installation, page 378; Bag Filling and Sealing, page 444; Wire Stitching Containers, page 524.

Acknowledgment is made to F. I. Brown of Bostitch, Inc., for aid in the preparation of this article.

STAPLECRAFT ANSWERS 2 PACKAGING PROBLEMS....



BOX AND CARTON ASSEMBLING

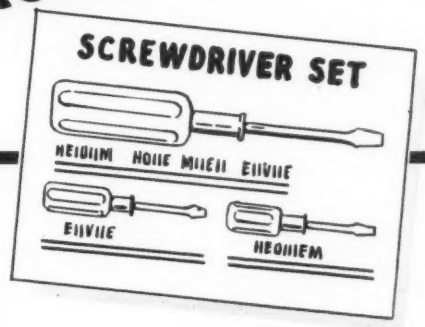


The assembling of boxes, cartons and other containers of all types and shapes made of corrugated or solid fibre board are problems for which STAPLECRAFT machines have been especially designed.

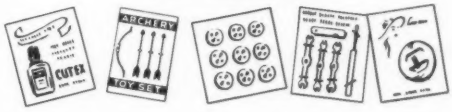
Working closely with carton and box manufacturers for the past 46 years, ACME has developed STAPLECRAFT equipment to keep pace with the vast changes in shipping materials and methods. Let ACME engineers assist you in solving your own packaging problems economically.

FOOT POWER, HAND POWER, OR MOTORIZED UNITS

$7.00 AND UP



ATTACHING MERCHANDISE TO CARDS



ACME has specialized in the merchandise carding field with equipment designed to attach every type of merchandise to cards—from thin glass vials to hardware.

ACME will work out *your* carding problems for you—just send samples of your product and a few cards. We'll show you as we have the largest Companies in retail selling, how to attach them via STAPLECRAFT—cheaper—better—faster.

FOOT POWER OR MOTORIZED UNITS WITH LARGE CAPACITIES

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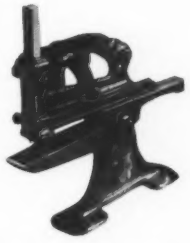
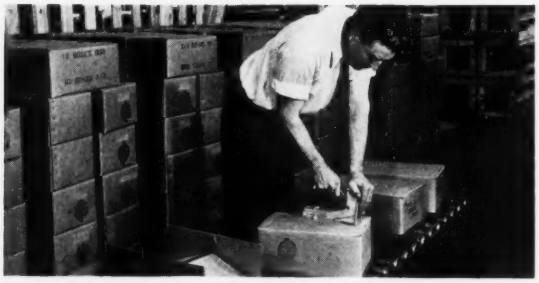


ACME STAPLE COMPANY

Staplecrafters Since 1894

1600 Haddon Avenue, Camden, N. J.



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1. Hand stapler as used for sealing corrugated boxes. **2.** Stitcher with anvil for sealing coffee bags. Courtesy Bostitch, Inc. **3.** Special type of stitcher for closing heavy duty multiwall paper bags. Courtesy Acme Steel Co.

each other and stapled with a hand operated or foot operated machine, depending upon the preference and needs of the packager.

Users of corrugated containers have widely adopted stapling methods. Foot or motor operated bottom staplers and stitchers are used to seal the bottom flaps, while specially designed top staplers and stitchers are used on the tops. Some of these top staplers make use of a sealing blade which is inserted under the flap and a more modern development is a top sealing stapler which is operated from the outside of the closed container, closing its staple entirely from the outside and requiring the insertion of no sealing blade.

The smallest machines used for bag stapling can be operated in the palm of the hand. There are heavy duty hand models of larger size, as well as a wide range of foot and motor driven machines all the way up to large automatic box stitchers. Complete information is available in the industry and it is an easy matter for the user to obtain the equipment that is exactly suited to the requirements of his particular work.

One of the widest uses of stapling in recent years has been in carding for display. Items of merchandise that are too small to possess sufficient attention power or to carry adequate sales information are stapled to cards which present the message to the consumer. Such cards serve to identify the brand and the manufacturer, to convey a selling message that the article itself is too small to carry and the salesperson too busy to tell, to carry directions and explanations that insure the proper use and care of the product, to advertise other items made by the same manufacturer, and to discourage pilferage, in the retail stores, from counter displays.

Practically any item that can be embraced by a staple can be carded in this way. Bottles or other fragile merchandise can be safely and quickly handled, because the pressure of the stapling machine can be accurately controlled without variation and the staple can be firmly clinched with no appreciable pressure whatever on the object being enclosed.

Speed is a big factor in stapling. Whether operated by hand, foot or electric motor, the stapling machine clicks out the staples as fast as the operator can handle the work. Every click completes a stapling operation. It is much faster for most kinds of bagging and carding than tacking, riveting, gluing, hinging, sewing, hooking and taping operations—operations which involve materials of all kinds. There is no waiting for an adhesive to set and the staple will hold regardless of temperature or moisture. Furthermore, stapling machines are portable and can be placed wherever most convenient for the work in hand. For example, in retail stores, where pre-packaging is to be done by clerks in odd moments, hand operated machines are used on each counter where the work is handled. Manufacturers and distributors can better concentrate their work and more often use foot or motor driven machines for both packaging and display.

The automatic-feed staple-hammer is also widely employed in packaging and shipping operations. Driving a staple like a double-pointed tack, with each single blow, this hammer is an efficient time saver.

On large production, wire stitchers instead of staplers are often used. A stitcher, in the parlance of the industry, is a machine which makes its own staples from a coil or spool of wire. Each operation of the stitcher-head drives a staple and forms another one, ready for the next stroke. Newer types of stitchers are portable and can be easily placed wherever most convenient for the work on hand.

The envelope sales package offers these 4 advantages

1 correct use of product
2 regular use of product
3 more frequent use of product
4 no hidden sales resistances

because it is . . . . an exact measured unit . . . . individual portion or service . . . prescribed dosage . . . recipe quantity . . . "the makings" . . . or any immediately usable quantity.

In Brown-made envelopes and packets, your product says: I'm a grain, a gram or an ounce . . . mix me to a pint, quart, or gallon . . . I'll be neither too strong nor too weak. Or, I'm an individual portion . . . pour me to a glass or cup . . . I'll be neither too thick nor too thin. Or, I'm a measured charge or dose . . . just shake me out . . . I'll be neither too much nor too little.

Package and product then overcome these hidden sales resistances: It doesn't do what it claims. It's too expensive. I haven't time to use it. I don't use it as often as I should. I can't take it with me.

BROWN AUTOMATIC FILLING MACHINE offers these 4 advantages

TO THOSE WITH PRODUCTS IN POWDERED, GRANULAR OR CRYSTAL FORM

1 fully automatic measuring, filling, sealing and counting

2 high speed production

Brown Filling Machines accurately and automatically measure the contents of, fill and seal envelopes and packets at a speed up to 3600 discharges per hour. Model P. F. 100 handles envelopes and packets from 1¾″ x 2⅝″ to 3¼″ x 4½″; Model P. F. 200 (*New!*) from 3¼″ x 4½″ to 5″ x 7″. Either model requires only one attendant. Only 2½ to 4 sq. ft. floor space.

Brown-made envelopes, accurately die cut for smooth operation, are

3 lower packaging cost

4 Brown-made envelopes and packets

made from a wide variety of paper stock and printed in one or more colors to any desired specification.

We will (1) test the adaptability of your product without charge – (2) provide filling service as required on our machines at our plant – (3) tell you how Brown Filling Machines may be purchased outright or leased on favorable terms – (4) quote cost of Brown-made envelopes. Your inquiry will have prompt attention.

THE BROWN BAG FILLING MACHINE COMPANY, FITCHBURG, MASS.

XUM

Case Packing and Sealing Machinery

Case packing equipment for can packing consists essentially of a series of inclined runways which receive and gather cans as they roll off the conveyor lines, until the proper number of cans have been assembled to fill one layer in the shipping container. The cans are then pushed, horizontally, into the container by a hand or electrically operated device. If the container is of a type to accept more than one layer of cans, this operation is repeated a sufficient number of times.

Bottle casing units work on a similar principle, but use a vertical drop, rather than a horizontal push, to effect entry of the packages into the shipping container. Bottles come off the conveyor lines and are gathered over a grid which correctly positions them. At the proper moment, and under the control of the operator, the bottles drop into the shipping container which has been automatically raised until it rests just under the grid.

Carton packers have also been developed, working on principles very similar to those of the can packer with the exception that the rolling action of the can is replaced by a pushing action to get the various rectangular cartons into position before placing them, en masse, into the shipping case.

Once packages have been packed—by hand or by machine—it becomes necessary to firmly seal them for shipment. The simplest devices for this purpose are the hand glue sealers, which are simply adjustable pressure units mounted on top of roller conveyor sections through which the hand glued cases are passed.

Case gluing and sealing units of an automatic type receive filled, but unglued cases directly from the conveyor line and apply adhesives to both the top and bottom flaps of the cartons with the goods already packed therein. They then fold the flaps into closed position and pass the sealed containers through a compression unit, where the glue sets. Speeds of from 200 to 1,200 cases per hour are practical on such automatic equipment. Such machines may be equipped to seal and glue top flaps only, as in the case of shipping containers for bottled goods which have previously been used to carry the bottles from the glass plant to the packaging plant.

The machines are completely automatic, require no operators and are adjusted to start in motion whenever a case is presented to the machine by the conveyor line.

Cross References: Types and Functions of Adhesives, page 474; Shipping Methods and Considerations, page 512; Corrugated and Solid-Fibre Cases, page 516.

1. Automatic top and bottom case sealer. Courtesy J. L. Ferguson Co. **2.** Packer and sealer handling beer cans and cases. Courtesy Standard-Knapp Corp. **3.** Case loader for beer bottles. Courtesy Standard-Knapp Corp. **4.** Case loader for can packing. Courtesy Burt Machine Co. **5.** Automatic case opener and erecter. Courtesy J. L. Ferguson Co.

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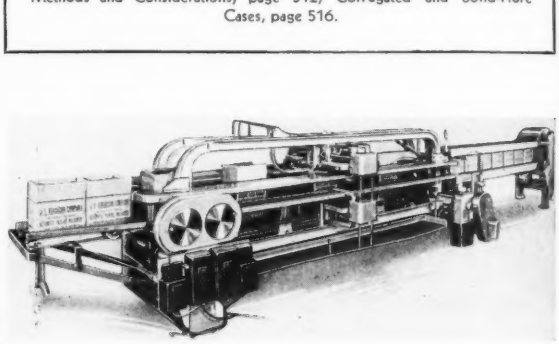

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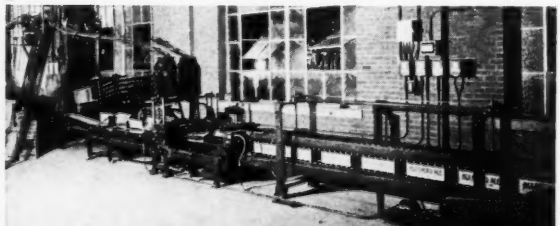

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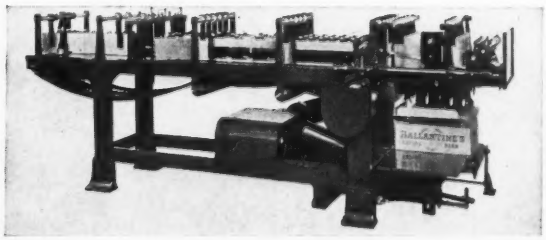

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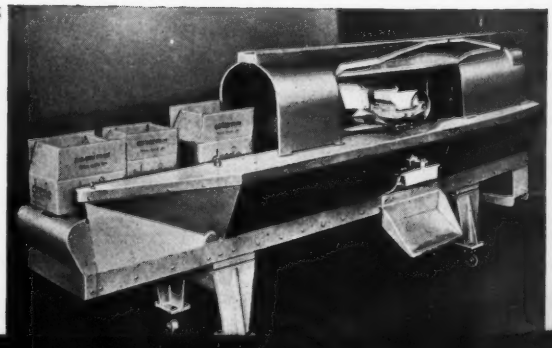
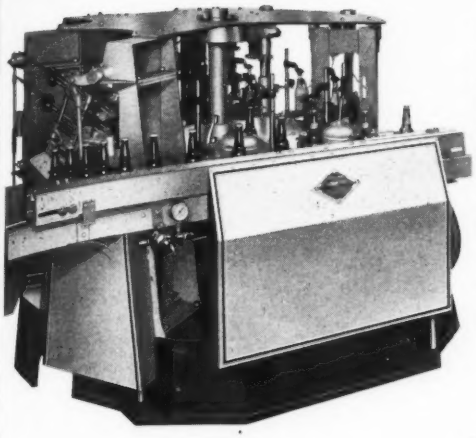


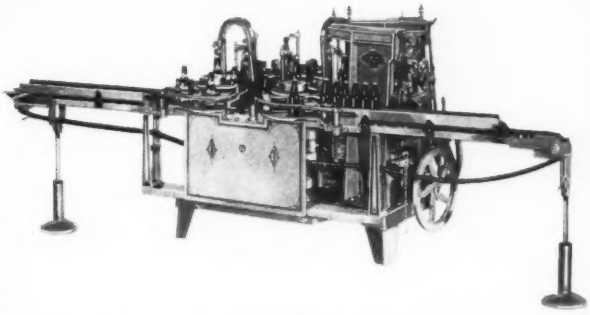
The Latest in Labelers



LIQUID TRIPLEX LABELER

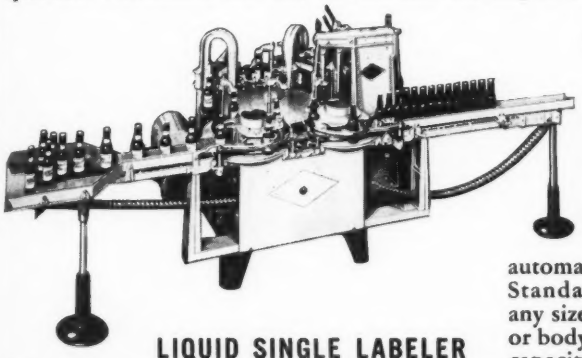
The Liquid Triplex is the latest addition to Liquid's line of completely automatic labeling machines. This high speed unit, with its three sets of label holders and pickers and with 12 heads on the turn table, is capable of a production of two hundred perfectly labeled containers per minute working with body and neck labels. The machine features a new worm feed and discharge mechanism especially designed for high speed operation. Despite the high production rate, however, the labeling operation is performed slowly and with extreme accuracy.

The "Triplex" labeler brings all of the advantages of the well-known Liquid "Single" and "Duplex" labelers plus its tremendously increased production rate.



LIQUID DUPLEX LABELER

The Liquid Duplex has proved itself the standard of the industry for many years. It is equipped with ten heads on the turn table and with two sets of label holders and pickers to handle 120 containers per minute with ease in plants requiring large capacity labeling production. All three machines, Single, Duplex, and Triplex, are completely automatic in operation. Containers are fed, labeled and discharged without being touched by human hands.



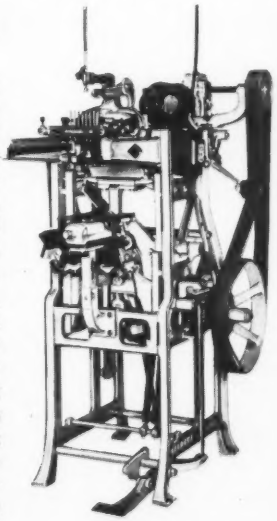
LIQUID SINGLE LABELER

The Liquid "Single" labeler has a capacity of 80 containers per minute and is fully equipped for labeling one size of bottle with either body or neck labels or both.

The precise construction of Liquid Automatic Labelers makes them unusually accurate in the placing of labels and their high speed cuts labeling costs to the bone.

LIQUID STANDARD LABELER

A semi-Automatic Machine in which bottles are fed and removed by hand, but in which the labeling operation itself is performed automatically. The Liquid Standard will label almost any size of bottle with body, or body and neck labels, at a capacity of 40 containers per minute depending only on the speed of the operator. It is ideal for use in those plants requiring a limited amount of labeling, or where production requirements embody the use of different sizes of containers.



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XUM

Package Conveying Equipment

When the application of materials handling equipment is being considered, whether the commodity to be conveyed is in cartons, boxes, glass or metal containers, or what not, it should be remembered that there is one definite type of conveyor, or combination of types, that will best serve in each particular case. It may be belt or roller conveyors, it may be pallet or live roller conveyors. In fact, it may be one or more of a number of different types set up in combination to do a certain job well. The conveyors applied depend entirely upon the job to be done, the conditions to be met.

Frequently arising are problems in handling which cannot be practically solved by applying the more common floor types of conveyors. It may be that floor space cannot be sacrificed to accommodate equipment of this type, or the commodity to be handled may be of such size and nature that it cannot be practically conveyed on floor units. Any number of such situations arise and are usually met with the application of chain trolley conveyors.

1. Deflecting arm switching cases from roller to belt conveyor. Photo courtesy Mathews Conveyer Co.

Belt Conveyors

The belt conveyor is perhaps the most versatile type, capable of innumerable applications. It can be level, inclined or declined; it can be reversible; it can be set at working height on the floor, or be suspended from the ceiling, out of the way of other activities; it can be stationary or portable. In fact, a system incorporating belt conveyors, if well-engineered, can be the most flexible handling set-up available, simply because conveyors of this type offer a flexibility typical only of them.

Rollers are the most commonly applied method of supporting the belt and the load. Usually tread rollers are complete with ball bearings, although friction bearings can be applied. It is poor judgment and certainly poor economy to support a belt conveyor with cheap, inadequate tread rollers. In doing this, one eliminates a strong point in favor of the belt conveyor—its dependability. In cases where the conveyor is short and the load fairly light, a solid supporting surface, known as a slider bed, is often used under the belt in place of tread rollers. It may be constructed either of wood or sheet metal. There is practically no vibration where slider beds are applied. This construction affords the smoothest possible means of conveying.

2. A snubbing device used to keep an inclined belt taut. Photo courtesy Mathews Conveyer Co.

Belt conveyor drives are quite interesting, but a description of them requires considerable detail. We will merely note the tandem drive and the conventional head-end drive are widely applied.

When a belt conveyor must be level and inclined, a two- or three-pulley arrangement, known as a snubbing device, is applied.

This device, located at the point of inclination, changes the belt from a level to an inclined plane. These snub pulleys are sometimes conveyor rollers, anti-friction bearing equipped. In cases where cartons or boxes must be transferred from gravity roller to an inclined belt conveyor, such a transfer is not possible if the angle of inclination exceeds approximately 12 deg. The cartons or cases would slide at the point of inclination. This problem is easily solved, however, by the application of a straight section of belt conveyor to receive the material from the gravity line and then inclining the conveyor to the desired degree by using a three-pulley snubbing device at the desired point of inclination.

Many types of belts are available for specific kinds of service. In the food industries, for example, where sanitary conditions must prevail, belts having a rubber-covered top and bottom surface are used. Where steep inclines and declines exist, belts having a rough top surface are quite generally applied. Belts available are stitched canvas, solid woven, rubber, rubber-covered, duck, steel mat, wire mesh and heat-resisting types.

An application of belt conveyors which merits special attention is assembly units. A slowly moving belt conveyor set at a working height approximately 30 in. above the floor, affords an ideal assembly conveyor for rapid

Cross References: General Considerations in Machine Installation, page 378; Corrugated and Solid-Fibre Cases, page 516.

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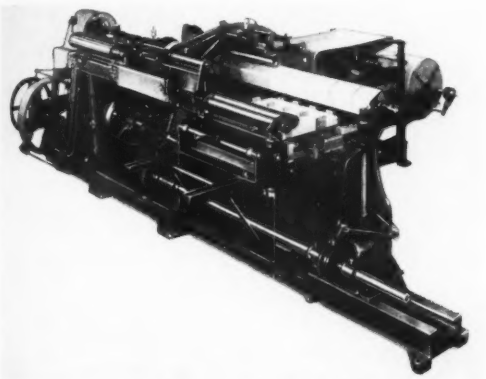

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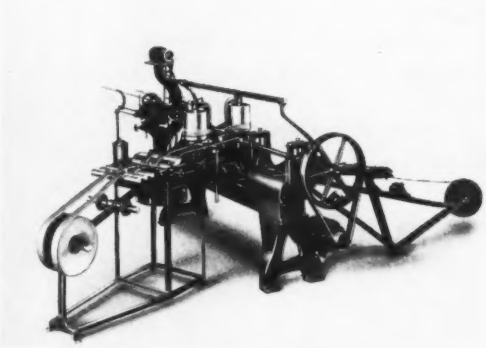

Knowlton Spiral Tube Winding Machine

To Send Out the Nation's Goods "Better Dressed" is the Job of These KNOWLTON FIBRE CAN MACHINES

These new Automatic Fibre Can Machines are the result of Knowlton's Fifty Years' experience in the packaging equipment field and incorporate a host of special features which are acclaimed as revolutionary by manufacturers and packers alike. The part which these KNOWLTON Machines play in increasing sales *(through Package Design)* is a mighty important one and is a task which they perform in an amazingly simple and economical manner.

The KNOWLTON AUTOMATIC CONVOLUTE WINDING MACHINE, for instance, accepts paper stock from the roll and *automatically* produces fibre can bodies in round, rectangular, or irregular shapes—applies the adhesive and lithographed labels and delivers the completed can bodies ready for the seaming on of the tin tops and bottoms.

This machine is equipped with an automatic slitting and labeling attachment which permits production of from one to five complete can bodies at a time during the winding process. It produces fibre cans up to 20″ in height or multiples thereof.

THE KNOWLTON SPIRAL TUBE WINDING MACHINE is another notable example of modern efficiency. It is the *fastest* and most economical machine for winding paper tubes or cores ranging from 2 to 19 ply and its product is unsurpassed for tube strength, accuracy and high quality in the making of food containers, cosmetic boxes, tissue cores, heavy mill cores, mailing tubes, dry battery cores, spools, etc.

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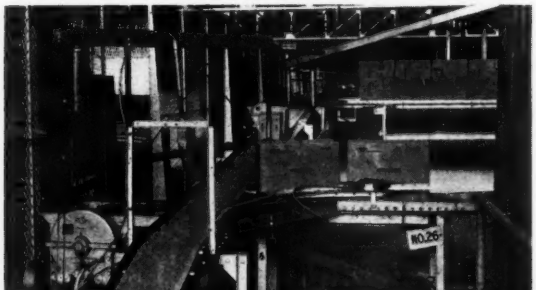
3. Belt conveyors used to bring material past operators at work tables. Photo Mathews Conveyer Co.

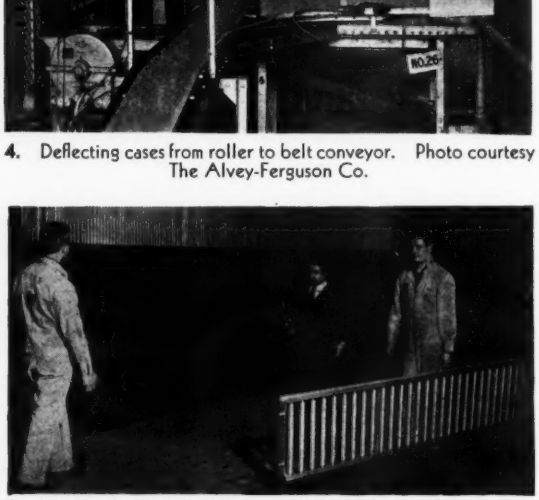
labeling, stamping and inspecting operations. When applied in this manner, belt conveyors greatly speed up operations and aid continuous flow methods, production is increased and confusion is minimized.

In applying belt conveyors, it is often desirable to deflect material from the conveyor at a predetermined point. There are several types of deflectors available. Some are operated by hand, others by a cable attachment, remotely controlled; some are stationary, others are portable. A very common design is that which has the deflector mounted on a shaft, which shaft operates on anti-friction bearings. A deflector of this type may be locked into place and quickly swung out of deflection position when that is desired.

Belt conveyors have a certain value from the viewpoint of a production manager. Consider an operation in which a belt conveyor carrying a line of empty packages serves a packing table. The packages are delivered at a predetermined rate. The operator is required to fill each package and replace it on the conveyor which carries it to the wrapping or sealing machine. If the speed of the belt has been set at a rate best suited to efficient operations, then it will continually deliver empty packages to the operator at a high rate of efficiency.



4. Deflecting cases from roller to belt conveyor. Photo courtesy The Alvey-Ferguson Co.



5. Newly developed light weight portable conveyor. Ten-foot section weighs 70 lbs. Photo courtesy of the Jervis B. Webb Co.

Roller Conveyors

Roller conveyors are the most commonly applied and the most economical type of modern materials handling equipment. At the time of the inception of the modern power-driven conveyor units, roller conveyors of the gravity type already had a long service record in many branches of industry. Today, as then, the gravity conveyor application is a very common and satisfactory one.

The widespread use of roller conveyors can be attributed to several factors which become obvious when one compares conveyors of this type with those of other types. For example: the comparatively low initial cost and upkeep, the great variety of roller sizes, bearing designs and frame constructions available and the fact that roller conveyors are usually made up in ten-foot sections, which makes them easy to move about and simple to erect.

Seamless or welded steel tubing is used in the modern roller and the range of sizes applied runs from one inch to twelve inches in outside diameter. There are approximately 25 different sizes available, all falling within the one-inch to twelve-inch range. This larger number of available standard sizes offers: (1) light duty conveyors for handling such articles as cartons of tobacco, confectionery and a host of other light commodities; (2) standard duty roller conveyor, for handling articles of medium weight, such as cases and cartons of bottled beverages, loaded cans and kegs, foundry molds, light machine parts and other articles of similar weight and character; (3) heavy duty roller conveyor, with the capacity for heavy castings, coils of strip steel, sheet packs and similar heavy and bulky materials.

With the increasing demand for roller conveyors in many industries, there came an accompanying demand for ball bearings of special designs. As a chain is no stronger than its weakest link, neither is a conveyor any better than the bearings within its rollers. Dairies, for instance, realized the need for hermetically sealed rollers and bearings to protect the equipment against acid, steam and moisture. Friction bearings of bronze or wood are available for certain applications. In fact, there is a certain suitable roller and bearing for every practical purpose.

While it may seem to be a feature of secondary importance to the subject at hand, the axles applied in conveyor rollers are really of considerable importance and for this reason: the inner ball race of the bearing must be positively locked with the axle, so that no rotation between these two parts is possible. A hexagon-shaped axle will provide this positive locking, as will a round axle, if the latter is equipped with gear teeth on both inner ball race and axle. In the latter case, these gear teeth will mesh and lock the two parts securely.

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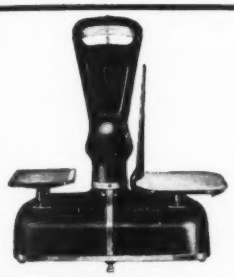

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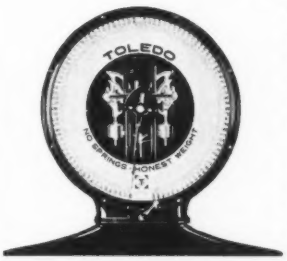

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TOLEDO maintains the only completely nation-wide scale service organization in both United States and Canada, with factory-trained mechanics stationed in 181 cities.

6. Roller conveyors used to carry cases past curves in package warehouse. Photo courtesy Mathews Conveyer Co.

Curves of any specified degree can be easily negotiated by roller conveyor. The rollers used in these situations are often tapered toward the inside of the curve.

Live Roller Conveyors

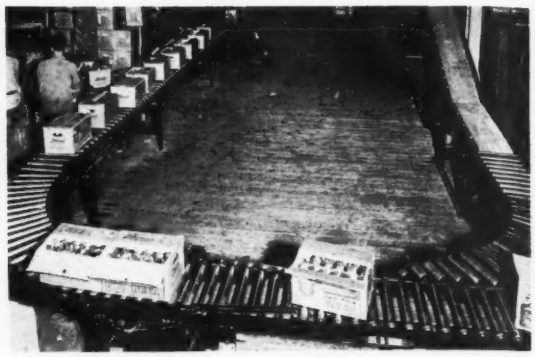
This design differs from belt conveyors and roller conveyors in that the means of carrying the load is not an endless belt but, rather, individual rollers driven by either a belt snubbed against the underside or by chain and sprockets or gears. Live roller conveyors are adaptable to extremely rough, hard service, the steel rollers will stand shock loading, abrasion and rough usage which would otherwise be detrimental to a belt surface over a period of time. A feature of the belt-driven type is the possibility of handling containers intermittently without stopping the conveyor. The rollers remain stationary beneath the containers while held against a stop. When the stop is released, the containers move on to the next work station or point of processing.

In the chain or gear-driven types, the roller action is positive and surface speeds as high as 500 F.P.M. and more are employed.

Trolley Conveyors

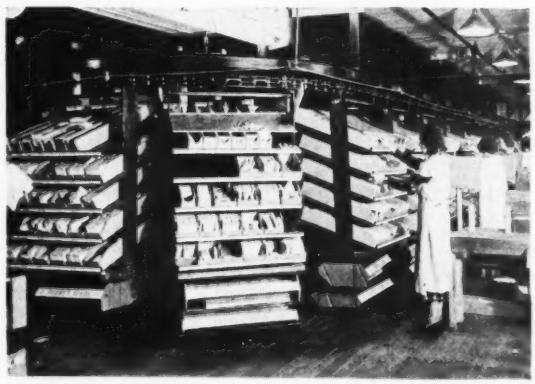
The trolley conveyor is not the most flexible of the various types of handling equipment and neither is it the most universal in application. However, it affords a great conservation of floor space and serves processing machinery and other operations just as efficiently as the more common floor type units. It is especially adaptable to mass production practices and may be used as a mobile storage area which provides a steady supply of material to machine operators, assemblers and packers. Transverse bends permit the trolley conveyor to lower to working heighr at predetermined points in the plant.

7. Live roller installation. Photo courtesy of the Mathews Conveyer Co.



8. Live roller conveyor, rollers actuated by belt motion on underside. Photo courtesy Standard Conveyor Co.

The trolley conveyor is dependable, simple in mechanical operation and rarely a source of trouble. The track used is a common eye-beam, supported from the ceiling or from the floor, whichever type support best applies in the case being considered. The trolley wheels used are of the ball bearing type. They may be grease-packed or pressure lubricated; plain or flanged; of pressed steel or cast iron. When high temperatures are encountered in ovens, nitralloy bearings incorporating a steel labyrinth closure are most practical.



9. Overhead trolley installation. Photo courtesy The Lamson Co.

The smooth negotiation of turns and corners is important if a trolley conveyor is to operate successfully. Roller turns or wheel turns are both suitable in this regard. The roller turn consists of rollers mounted with through shafts set vertically in a frame. These are made up in standard 45 deg. sections and can be combined to give any degree required. This type of turn requires no regular lubrication and is low in initial cost and upkeep. It provides uniform chain tension throughout the conveyor. The wheel or sprocket turn consists of an ordinary traction wheel or sprocket to negotiate the turn and provide chain tension.

The fact that so many different types of carrying devices can be applied, adds to the flexibility of conveyors of this type. Hooks and trays have been developed for handling furniture, automobile tires, coils of wire, cigarettes, radiator shells, machine parts, electrical appliances and a score of other products.

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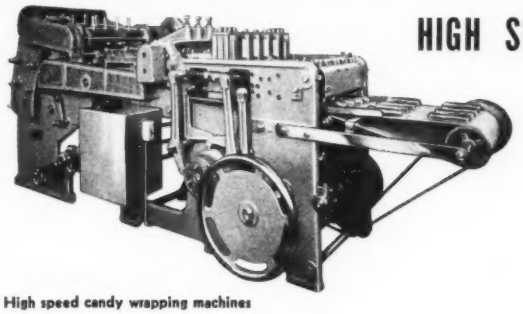

High speed candy wrapping machines

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1—Rotary wrapping machine for candy bars and similar products. Speed of 75 bars per minute per line with each machine from 1 to 14 lines in width. Takes continuous wrap from rolls of foil, paper, glassine or cellophane . . . slits individual labels and moves product through machine in continuous production.

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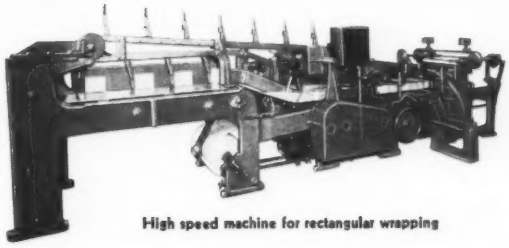
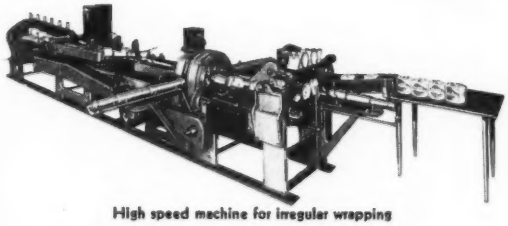
2—Rectangular packaging machine that takes continuous wrapper from printed roll; spots the product to be wrapped; tubes wrap over product; then cuts and folds in ends. Accurate register and perfect placement of wrap is assured at the highest speed. Operation is of the rotary type.



High speed machine for rectangular wrapping

HIGH SPEED • IRREGULAR PACKAGE WRAPPING



High speed machine for irregular wrapping

3—Takes continuous wrapper from roll; tubes wrapper around product; cuts and twists ends over any cylindrical object. Used on toilet tissue rolls, bottles or any similar irregularly shaped product. Printed wrapper is perfectly registered by means of a photo-electric cell.

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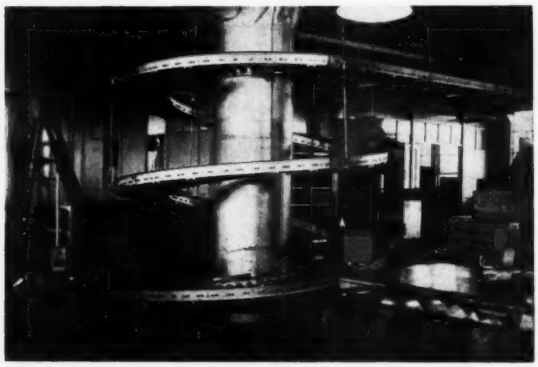
XUM

Roller Spiral Conveyors

Roller spirals consist of a number of 90-deg. curved sections of roller conveyor set in the form of a spiral and mounted in a structural steel framework.

As a means of lowering merchandise smoothly and safely from floor to floor, the roller spiral conveyor compares favorably with sheet metal spirals and is widely applied. In fact, the roller spiral has advantages to offer which are peculiar to it alone. It is positive and smooth in action and can be used for temporary storage when that is necessary. Since the descent is quite slow and very smooth, cartons, boxes, kegs and containers of many kinds can be handled on the spiral uncovered, without danger of damage or upsetting.

The roller spiral conveyor is made in three standard types, namely: (a) the single roller two-rail type with standard straight rollers; (b) the single roller two-rail



10. Spiral roller conveyor built around a pillar. Photo courtesy The Lamson Co.

type with standard tapered rollers; (c) the double roller three-rail type with standard straight rollers. For best results, the double roller construction is recommended, for it offers greater strength since it places a greater number of bearings under the load and reduces outside guard rail friction to a minimum. This latter feature lowers the possibility of stoppage at inaccessible points of the spiral. The single roller types are recommended only when small sized and light items are to be conveyed.

In many cases where a roller spiral passes through and serves several floors, it is desirable to put materials on the spiral or remove them from it at intermediate floors. To accomplish this, loops are used at these specific floors. In other words, at the point where commodities are to be taken from the conveyor, two straight sections and half a turn of roller conveyor are inserted in place of one-half turn of spiral. This forms a loop extending out from the spiral and affords the opportunity of the straight sections being used as switches to additional lines of roller conveyor. These switches can be so arranged that the commodities will travel, without interference, on down through the floor without stopping.

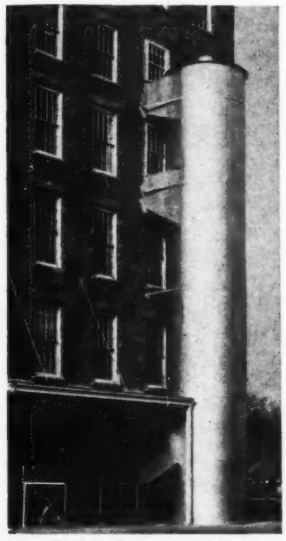
Where the lack of space will not permit the use of the loop arrangement, the same results can be obtained, although not so satisfactorily, by means of intermediate receive and discharge frog sections inserted into the spiral at the desired points. The intermediate discharge section is equipped with a swinging type of guard controlled by a hand-operated mechanism. When commodities are to continue down the spiral, the guard rail is set in line with the spiral guards along the periphery of the spiral, but when it is desired to discharge the commodities at the intermediate point, the guard is swung across the path of the spiral, thus deflecting the commodity onto a connecting line of roller conveyor. This arrangement is not applicable to spirals having tapered rollers.

Roller spirals are usually constructed with a single track, but, when necessary, they can be constructed with two or three tracks, one above the other. The only advantage this construction offers is that materials may be received from different locations and kept separate during the descent and discharge.

Sheet Metal Spiral Chutes

The sheet metal spiral chute is without peer when merchandise must be lowered from one floor to another. Utilizing the force due to gravity, it offers a continuous delivery service that requires no power and is always ready for use, having practically an unlimited capacity.

There are several types of spiral chutes, each one useful in its own field of application. The enclosed type of spiral chute is widely applied for handling boxes, bags, bales and even loose materials. It is most desirable in cases where the material being conveyed must be carefully checked by certain individuals assigned to that job. The conveying done on a chute of this type is not visible to the public and those at the receive and discharge ends can be entirely responsible.



11. Enclosed type spiral chute. Photo courtesy of the Mathews Conveyer Co.

Floor openings for spirals of this type are circular, being slightly larger than the enclosure itself. In many cases, enclosed spirals are erected outside a building. In that case, the spiral is usually made of galvanized sheet metal, due to the condensation which is encountered in that construction.

The open standpipe type chute is suitable for installation in closed or open shafts where, for various reasons, an enclosed type chute is not necessary. In existing buildings, old elevator shafts are often used for installing the spiral. When no shaft-ways are available, it is necessary to cut an opening in the floor large enough to allow the standpipe and blade to pass through, plus sufficient clearance for the maximum size package to be conveyed. The standpipe used with this type of spiral is merely a substantial iron pipe to which the blade is riv-

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A few suggestions

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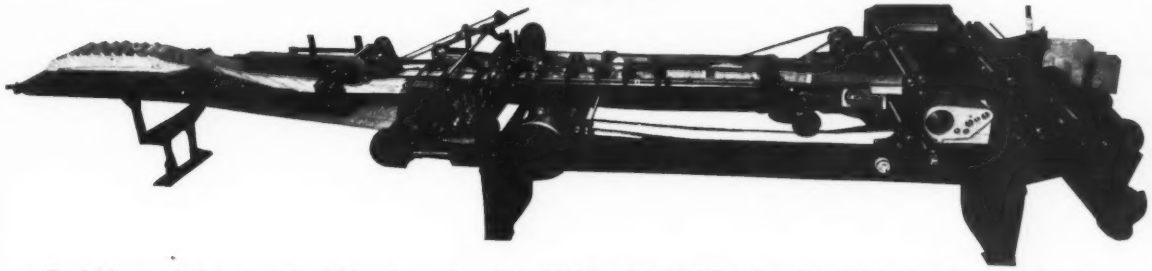

For folding and gluing regular folding boxes from 1" to 20½" wide folded flat; from 3" to 40" in length. Speeds up to 1000 lineal belt feet per minute.

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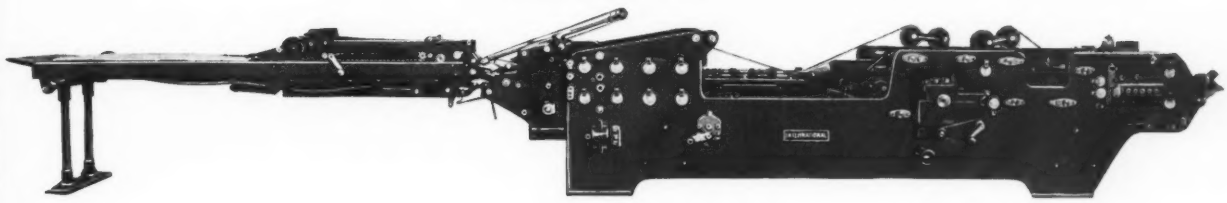

For crease breaking, folding and gluing regular folding boxes from ¾" to 10" wide folded flat; from 1-⅞" to 20" in length. Speeds up to 1000 lineal belt feet per minute.

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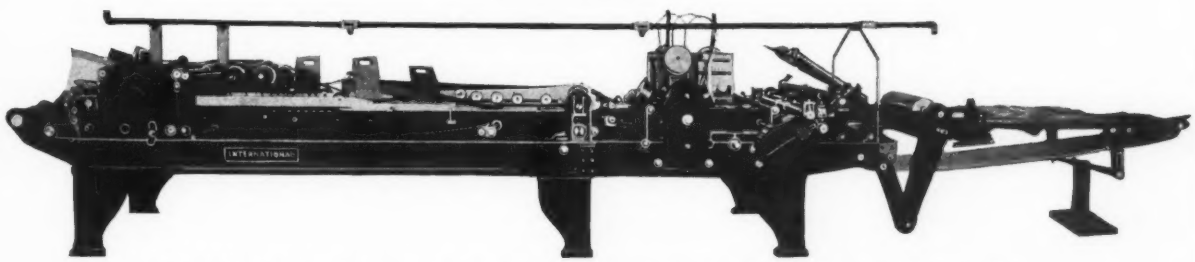

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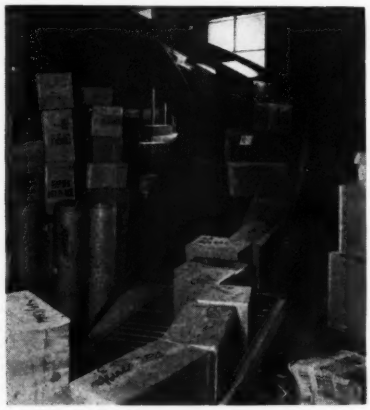
eted and around which it describes a spiral. The standpipe rests on the lower floor and extends upward the entire length of the spiral.

The open core type of chute is especially adaptable for handling long and narrow articles of bulky classes of merchandise. It is used where the spiral can wind around an existing column or where it passes through floors in locations limited by beams or girders that cannot be conveniently cut or moved. This type of spiral has no enclosure or center standpipe to support the blades. It is supported entirely by means of hanger supports fastened to the ceiling or floor supports and by angle floor plates located at each floor opening.



12. Chute supported by ceiling hangers. Photo courtesy Mathews Conveyer Co.

Large and small boxes, such as containers used in wrapping department store merchandise, cartons of all kinds and containers of practically any size and shape can be conveyed on spiral chutes designed especially for handling such containers.

Pusher-Bar Conveyors

In plants of many branches of industry, it is frequently necessary to apply long lines of roller conveyor, some of which are at different elevations than others in the same system. Unless the height at the point of receive is unusually great, these long gravity lines must be regraded and, also, some connecting link must be applied between the lines at different elevations, if there is to be any continuity in the system. Aside from the inclined belt conveyor, the most common unit applied for regrading gravity conveyor lines and for connecting one conveyor line to a higher one, is the inclined pusher-bar conveyor.

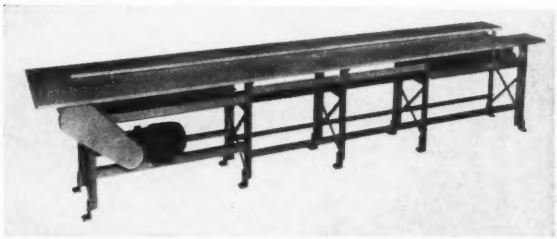
13. Inclined pusher-bar conveyors. Photo courtesy Mathews Conveyer Co.

This type of unit, which is essentially a chain conveyor, is comparatively plain in design and is rarely a source of mechanical trouble. It consists mainly of two parallel strands of roller chain, which operate smoothly on run angles. Pusher-bars are mounted at intervals in the chain. They are usually made of pipe and serve to push the load up the incline. The load being conveyed is supported by a heavy sheet metal tread plate, which serves as a slider bed, being of a smooth surface which creates very little friction.

To meet the demands of both heavy and light service, pusher-bar conveyors are built in light and heavy duty types, each type, of course, having its specific application. The light duty units are used where the load involved is comparatively light and does not exceed 25 ft. in length. The heavy duty conveyor is applied where the unit is long or the load involved is comparatively heavy. Both light and heavy duty types of pusher-bar conveyors are to be had in four standard inclinations, as follows: 30 deg., 45 deg., 60 deg. and 90 deg. However, practically any degree of inclination can be applied when necessary for special conditions.

Chain and Belt Package Conveyors

To connect automatic and semi-automatic machines, chain conveyors are usually utilized. These consist of a loop of metal link chain, each link providing a flat platform upon which the packages are carried from stage to stage on the automatic line. Individual chains may connect each machine with the next in line or—more frequently—a continuous chain is used, running through the various machines from start to end of the packaging line. Usually a separate power-driving unit and a variable speed drive are utilized. A wide variety of chain forms has been developed to meet the requirements of various types of packages and packaging operations.



14. Work table conveyor. Belt is of rubberized fabric 1 ft. in width. Geared-head motor at discharge end drives the belt. Photo courtesy Horix Mfg. Co.

Belt conveyors, with or without work boards on each side, are usually utilized where operators perform those packaging steps best done by hand. Such conveyors are available in both portable and permanently fixed varieties. Belts are of fabric—often a rubberized fabric—and are mounted on angle-iron frames with adjustable legs to permit leveling. Belt widths and work-board widths may vary with the nature of the job to be performed. A common practice is to utilize a 1-ft. belt with two 12-in. work boards on either side.

TERKELSEN SPIRAL WRAPPING MACHINES

FOR wrapping circular objects, like rolls of hose or tire, or straight lengths of tubing or other materials. Quality construction means long life and low upkeep.

Machines have been furnished for many industries for the spiral wrapping of work in process as well as for shipping packages. We invite your inquiry.

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Bag Making Machinery

Generally speaking, all bag making machinery is fundamentally similar in the sequence of the various operations which they perform. Paper, either plain or pre-printed, is fed continuously from a roll. Seam paste is applied to one edge of the paper web. The paper is then guided over a "former" to form a tube. The continuous tube is then severed to bag lengths by a cut-off mechanism.

This cut-off device may be either a striker blade, moving with a reciprocal action, or a rotary knife. The cut-off sections of paper tubing are completed by scoring to facilitate the folding of the bottom, by application of paste and by closing the bottom portion.

While this description applies, in its essentials, to virtually all bag making machines, individual machines differ greatly in design, size, capacity and the manner in which they perform each of the successive operations. For the making of large bags of both the single wall and the multiwall types, some manufacturers provide separate machines for forming the tubes and other machines for closing the bottoms of the severed tube segments. When multiwall bags are to be made, a tuber is used having several roll-feed attachments. As many rolls of paper are placed in the machine as is necessary to provide the desired number of layers in the bag wall. These are fed simultaneously into the folding mechanism and so folded that the individual layers overlap in sequence to provide a multiple seam of great strength.

Simple bags can be so formed that virtually none of the paper web is wasted in cutting the web into segments. In the case of more complicated shapes, cutting drums are so designed as to cut away undesired portions of paper and these are immediately removed from the machine by gripping devices. For the production of special types of bags, such as the satchel bottom varieties, such machines are usually utilized to make the complicated bottom folds. Square bag machines perform the additional operation of folding the paper tube into side gussets before the bottom is formed and pasted.

Numerous machines have been developed in recent years for the fabrication, either automatically or semi-automatically, of bags in smaller sizes and of the newer materials, such as the transparent cellulose sheetings. Frequently, these machines are installed in the package-using plant and form the bags immediately prior to use. In certain instances, this provides savings in that it permits the consumer to purchase roll stock, rather than fabricated bags, and eliminates the storage of made-up bags. It also makes possible an adjustment in bag sizes where the demand for such sizes covers a large range and varies unpredictably. It cannot, however, be said that the use of bag making machines of these types is always

The aid of Walter Abbe, Jr. of The Smith & Winchester Manufacturing Co. and H. H. Weber of H. G. Weber & Co., Inc., in the preparation of this article is gratefully acknowledged.

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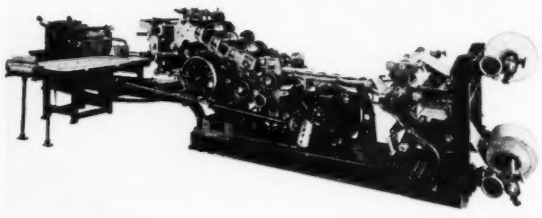

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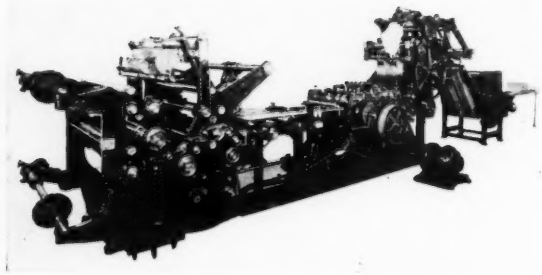

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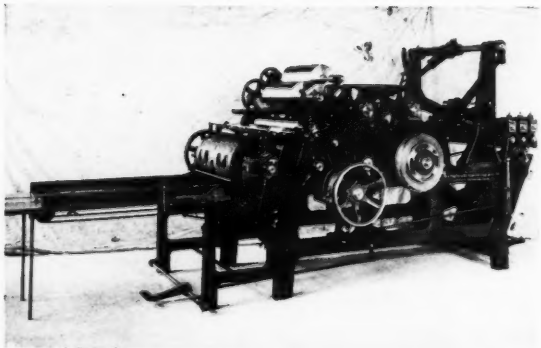

1. Grocery bag machine, making single ply self-opening style bags. **2.** Satchel bottom machine with automatic photocell control for producing printed bags. Frequently run directly connected to aniline press. Photos courtesy H. G. Weber & Co., Inc. **3.** Bottoming machine for folding and sealing bottoms of plain or valve bags after bodies have been formed on a tuber. Photo courtesy The Smith & Winchester Manufacturing Co.

Cross References: Paper Bags: Types and Uses, page 204; Transparent Cellulose Bags, page 206; Metal Foil Bags: Types and Uses, page 210; Bag Closing and Sealing Methods, page 212; Merchandise Envelopes and Packets, page 218; Heavy Duty Multiwall Paper Bags, page 222; Bag Filling and Sealing, page 444; Box and Bag Stapling Equipment, page 446; Types and Functions of Adhesives, page 474.

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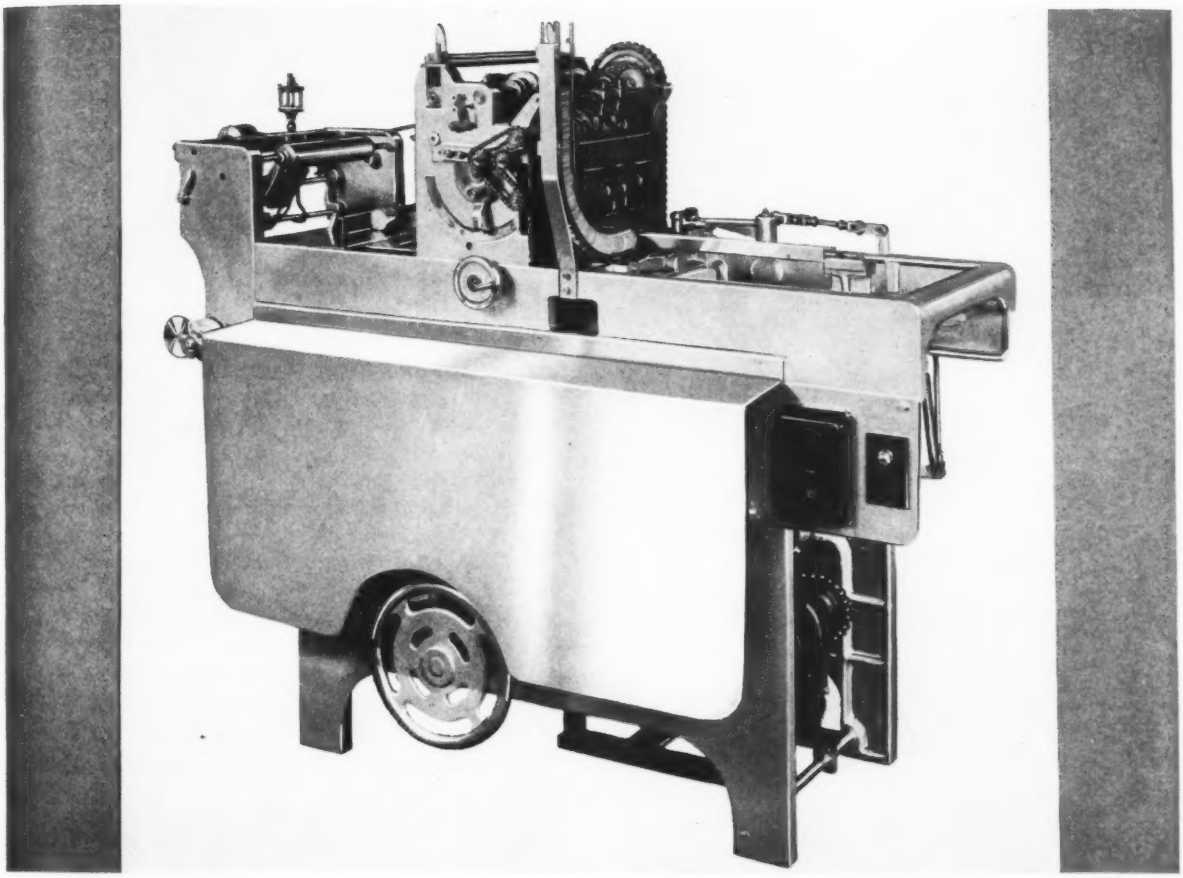

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TRADE MARK

THIS machine was designed and built by us to meet the exacting demands of modern packaging lines. It wraps and seals in both of the famous transparent materials mentioned above. It produces packages at a speed of 25 to 30 per minute.

Cookies and crackers can be wrapped on this Richard machine ***without trays.*** The machine is easily adaptable to handling packages of various shapes and sizes.

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RICHARD MACHINE COMPANY

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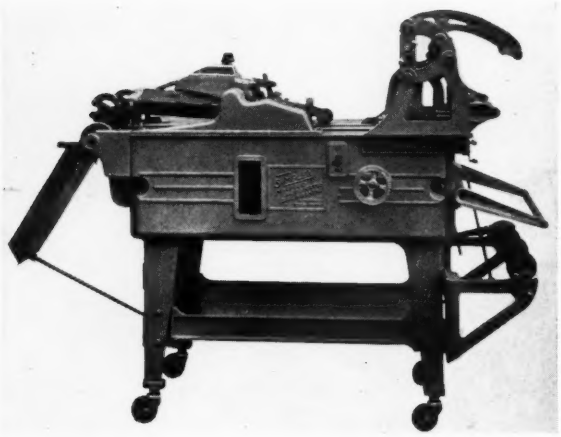
*Reg. T. M. of E. I. duPont de Nemours & Co., Inc.

#Reg. T. M. of Goodyear Tire & Rubber Co.



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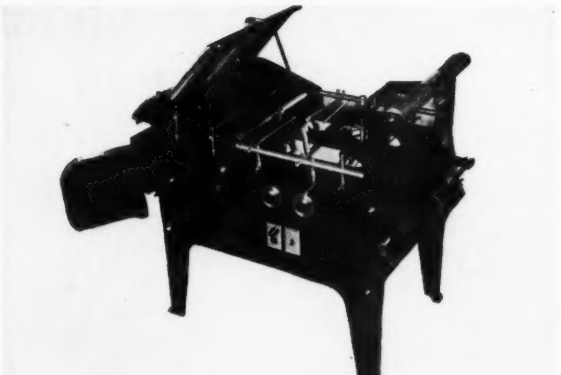

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4. Automatic machine with photo-electric cell control to position printing. Equipped with heat-sealing mechanism. Courtesy Simplex Wrapping Machine Co. **5.** Semi-automatic tube and bag maker for flat and gusset bags. Widely adjustable. Courtesy Wrap-Ade Machine Co., Inc. **6.** Automatic bag maker with mechanical print register control and heat-seal device. For bags up to 12 in. by 20 in., with or without gussets. Courtesy Modern Containers, Inc. **7.** Automatic transparent bag machine with spot registering electric eye adjustment. Forms rectangular bottom bags over mandrels. Courtesy Peters Machinery Co.

or even generally to be recommended as against the use of pre-fabricated bags, since the equipment used by the bag manufacturer operates at high speed and upon the orders of many customers and hence boasts numerous economies of its own.

One of the newer automatic machines feeds the web from a roll controlling the printing register by electric eye adjustment. The bags are formed over mandrels and automatically stripped therefrom, being discharged onto a conveyor belt ready for use. Another machine of relatively new type boasts an extreme range of adjustability and the possibility of high-speed adjustment. Bags may be made on this device from heat-sealing materials and both flat and gusset types can be formed.

A third automatic bag making unit has a range of from 1 in. by $1\frac{1}{2}$ in. to 12 in. by 20 in., making flat and square bags with gussets of from $\frac{1}{4}$ in. to $5\frac{3}{4}$ in. A semi-automatic type, recently placed upon the market, requires a single operator to form either flat or gusset bags of plain cellophane or any heat-sealing material. The machine takes the material from the roll, applies adhesive along the seam and forms a continuous tube. This is done automatically when the operator grips the end of the continuous tube with a gripping device and draws the tube out of the "formers." The gripper jaws are thermostatically heated and thus crimp-seal the end of the tube automatically, forming the bag. A push pedal operates a rotary knife which cuts off the tube or bag to desired length.

Bag making equipment, as used in high production operation, frequently operates in tandem with printing equipment which prepares the web for the bag forming operation. In other instances, bag making equipment is closely tied in with the bag filling unit and supplies bags at a rate of speed designed to keep up with the operation of the filler.

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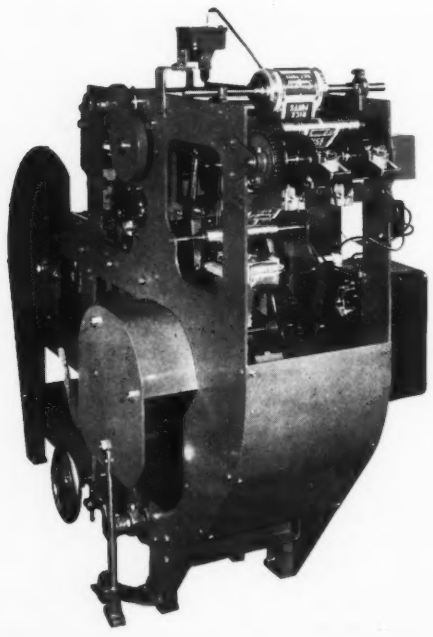


Folding Boxmaking Machinery

High-speed automatic folding box gluing equipment has been one of the major causes for the popularity of the folding box. The wide range automatic folding box gluers are equipped, as a general rule, with three different types of automatic feeding devices for handling the many different styles of blanks capable of being run on such equipment. Blanks are placed in a pile in the feed hopper and are fed either from the bottom or the top of the pile, depending on the type of feed. The blank passes between upper and lower traveling folder belts which advance it past a bottom glue pot where adhesive is applied to the glue lap areas.

Traveling folder belts then gradually fold the outer panels. The left-hand panel is folded down first and the right-hand panel is folded so that the outer edge comes over the glue lap. When the blank leaves the fold mechanisms, it passes between breaker rolls which exert pressure over the folded crease lines and prevent the blank from popping open. The blanks are then counted, generally by means of a high-speed electric counter which throws every 25th or 50th carton slightly out of the regular line of travel, so that the boxes can be gathered up in counted lots. The blanks then pass into the stacker compression section which moves at a very slow rate of speed. The blanks accumulate in this section and then pass between an apron and a compression belt which allows the glue to set.

In an effort to increase the versatility of the standard folding box gluer, one machine manufacturer offers an attachment used at the front end of the gluer so that, in addition to regular folding boxes, double side wall, spot glued and outwardly collapsed boxes can also be handled.

Recently, manufacturers of filling equipment have introduced new high-speed machines which must use crease broken folding boxes in order to maintain maximum efficiency. To meet this requirement, one manufacturer offers a machine which breaks the glue lap a full 180 deg. and the third crease beyond 90 deg.

There are several machines on the market for automatically applying windows to previously apertured carton blanks. The blank is fed into the machine by a top combing feed and is contacted and advanced by traveling timed chainpins past the glue applying mechanisms where adhesive is applied in proper location around the edge of the aperture in the blank. Then the blank continues to travel to the window applying mechanism where the proper length of cellulosic material is severed from a roll and placed on the blank in proper register. The method commonly employed to transfer the severed window material to the blank is by the use of an aluminum drum in which are suction holes The window is held to the drum until it is in position, then suction is released. Such equipment is also used for applying transparent liners to frozen foods boxes. Window machines operate at production speeds up to approximately 600 patched carton blanks per minute.

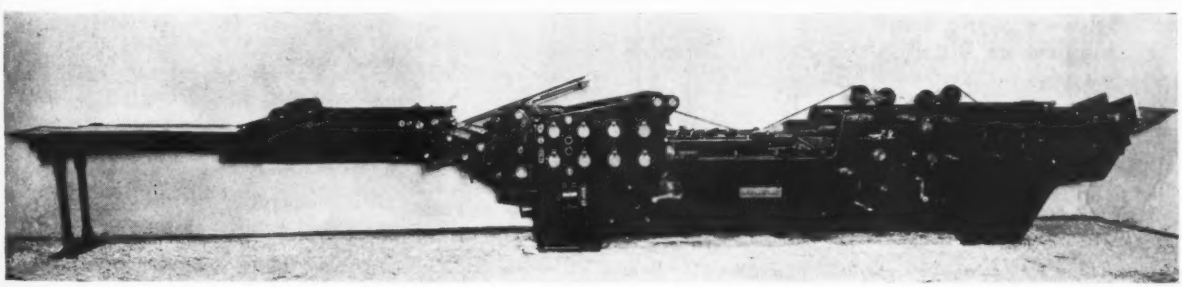
There are two types of automatic machines available for applying paraffin to cartons. One type applies a hot or saturated finish, the other a high gloss finish. Both types of machines can be adjusted to remove the paraffin from the glue lap areas at the time the blank is paraffined, so that the blank can be glued and folded at high rates of speed on automatic gluers.

New rotary infold machines, operating at high rates of speed, are now available for folding and gluing inwardly collapsible set-up boxes such as the 1- and 2-lb. cheese boxes, cake and pie boxes, laundry and suit boxes which can be shipped in collapsed condition and set up and filled in the consumer plant.

Cross References: Boxboards: Types and Selection, page 32; Folding and Display Cartons, page 35; Specially Processed Cartons, page 68; Transparent Wrapping Sheeting, page 188; Types and Functions of Adhesives, page 474.

Acknowledgment is made to Roger C. Dickey of the International Paper Box Machine Co. for aid in the preparation of this article.

Crease breaking, folding and gluing machine. Photo courtesy The International Paper Box Machine Co.



Set-Up Boxmaking Machinery

Set-up paper boxes, aside from "stock boxes," are important factors in packaging since so many products are more suited, economically and by nature, to the features of the set-up paper box. In this field the development of automatic machinery has provided the means of creating many effects, hitherto unobtainable, save by costly hand labor. This is important to those manufacturers who make products in mass, permitting either mass purchase, or installation of their own equipment for producing their own boxes.

Set-up boxes in relation to the methods of making the many types and styles may be grouped as follows:

1. Stripped and Top-labeled Boxes: The question of paper wastage prompted a different technique in boxmaking. Since the bottom of the box is almost never seen, the larger boxes offer a decided saving in cost when made merely by covering the sides of the box, turning over the bottom edge and turning in the upper. This type of box, used for candy, shoes, rubber goods, shirts, collars, knit-goods, hosiery, etc., can be made on either semi-automatic or fully automatic units. Naturally on large runs of standard size, the economy is appreciable, without really affecting the appearance of the container.

The additional feature of applying separate labels for tops and ends, where more than one article is packaged in boxes of the same, or approximately the same, size or shape, is simplified by the use of a newly developed and highly economical unit, operated either separately or "in line" with the stripping machine; fully automatic, or semi-automatic, as desired. This machine glues "all over," is adjusted to use less adhesive and eliminates all glue seepage, with perfect registration.

2. Wrapped Boxes: This is the method by which many of the ordinary boxes are made. The process, mechanized, still requires a skilled operator, with part time of an attendant to feed and remove the completed boxes. Recent improvements have increased the potential speed of the wrapper, the gumming of the wraps being done by a gluing unit which conveys the wraps to the operator. There is also an improved unit which takes the wraps from a hopper, applies the adhesive, automatically registers the set-up box on the wrap and feeds it to the wrapping unit.

3. Blanket or Pinched-top Boxes: These are packages made in box-form, combining paper of two different types or colors, "blanketing" the top with the trade mark label and "stripping" the sides. There is a fully automatic unit capable of precision work.

4. Padded-top Boxes: Like domed tops, the padded top is an effect which adds distinction to the package. Mechanical units which handle the paperboard box and equip it with a cotton or paper pad, spotting the pad correctly on the inside portion of the top-label, and applying the complete, padded top to the box, have been standardized, so that a wide range of box sizes can be fitted with merely minor "form" adjustments.

5. Odd-shaped and Multi-cornered Boxes: Fully automatic box- or package-making units are available for the "hand-made" type of box—those containers with unusual shapes—three, four, five cornered, even six or eight sided.

6. Slide Boxes: Many items are packed in slide boxes, the type comprised by a shell, and the slide which carries the product, and fits snugly into the shell. Machines for making the shells, and for the slides as well, are available. They are essentially speed machines, designed to operate at low cost.

7. Telescope Boxes: This is the type of box wherein the lid fits completely over tray. Methods of making these vary from the semi-automatic type requiring a single attendant, to the fully automatic (see paragraph 2) which takes board and paper from feed rolls. Such units are particularly economical where quantity production is a factor. The boxmaker, for instance, can produce first, the tray, and then its telescopic cover, and at other times can produce just trays of the same, or varying sizes, intended for transparent cellulose wraps.

8. Boxes with Necks or Shoulders: Problems in packaging, which can be met with rectangular boxes, may find attractive appearance in the happy solution of production by a unit which makes tops and bottoms of exact size and obtains a snug fit for them by use of a "neck," which is produced on a different unit, inserted after an inside gluer applies adhesive to the boxes as a conveyor feeds them from the boxmaking machines.

9. Hinged-top Boxes: One of the problems in production is the application of a hinge to packages or boxes so that the container is permanently attached to the top by a paper hinge, either inside or part of a top and bottom label. There is a machine which does this work successfully and economically.

10. Labeling: Rarely is a set-up box complete without applying a label. Recently designed equipment for this type of work handles either paper or foil labels, of any shape, in a wide range of sizes, gives perfect register, blister-free and clean work because the adhesive feed is controlled to eliminate glue seepage.

Acknowledgment is hereby made to C. A. Claus, vice-president, New Jersey Machine Corp., for aid in the preparation of this article.

Cross References: Box boards: Typesand Selection, page 32; Set-Up Paper Covered Boxes, page 74; Transparent Combination Boxes, page 86; Decorative Materials—General Considerations, page 156; Fancy Boxmaking Papers, page 160; Decorative Ribbons and Ties, page 174; Printed and Lithographed Labels, page 300; Types and Functions of Adhesives, page 474.

TRIANGLE *Simplified* PACKAGE MACHINERY

Weighing and filling marshmallows in cellophane bags with ELEC-TRI-PAK machine at Brock Candy Co., Chattanooga.

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Automatic and Semi-Automatic

CARTON SEALERS
AUGER PACKERS
VOLUMETRIC FILLERS
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Packaging dry materials in cartons, bags, cans, bottles, envelopes

TYPICAL USERS

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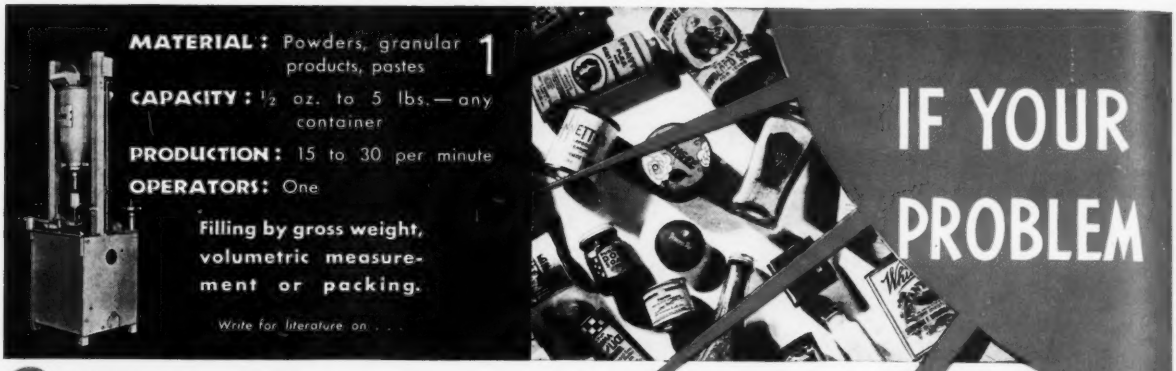


MATERIAL: Powders, granular products, pastes 1

CAPACITY: ½ oz. to 5 lbs. — any container

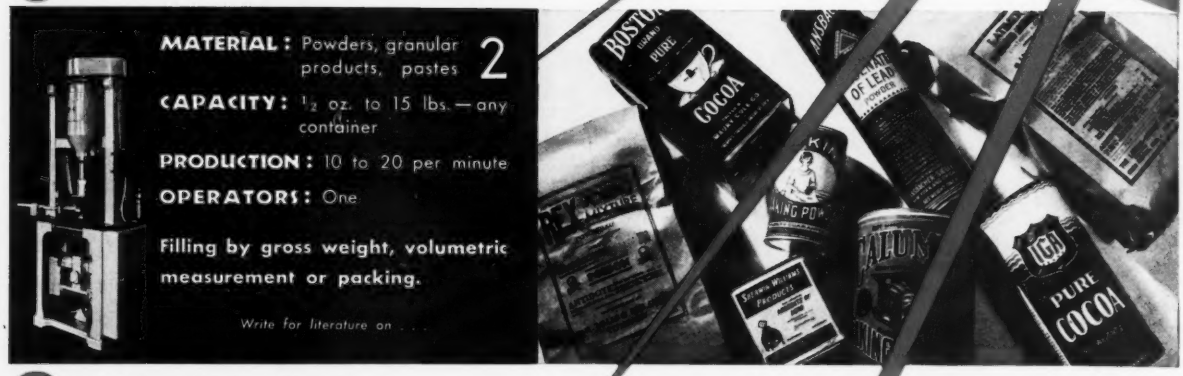
PRODUCTION: 15 to 30 per minute

OPERATORS: One

Filling by gross weight, volumetric measurement or packing.

Write for literature on . . .

S&S UNIVERSAL FILLER



MATERIAL: Powders, granular products, pastes 2

CAPACITY: ½ oz. to 15 lbs. — any container

PRODUCTION: 10 to 20 per minute

OPERATORS: One

Filling by gross weight, volumetric measurement or packing.

Write for literature on . . .

S&S HEAVY DUTY FILLER

MATERIAL: Powders and granular products 3

CAPACITY: 1 oz. to 5 lbs. — cans, boxes, canisters

PRODUCTION: 20 to 120 per minute

OPERATORS: One

Filling by gross weight, volumetric measurement, or combination of both.

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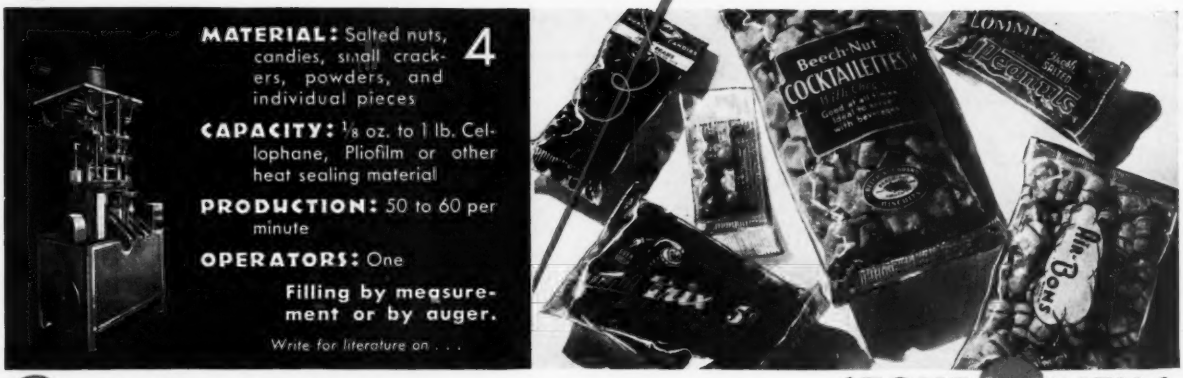
S&S AUTOMATIC DOUBLE UNIT FILLER



MATERIAL: Salted nuts, candies, small crackers, powders, and individual pieces 4

CAPACITY: ⅛ oz. to 1 lb. Cellophane, Pliofilm or other heat sealing material

PRODUCTION: 50 to 60 per minute

OPERATORS: One

Filling by measurement or by auger.

Write for literature on . . .

S&S TRANSWRAP PACKAGING MACHINE

IF YOUR PROBLEM

STOKES & SMITH Co
FRANKFORD PHILADELPHIA

5 **MATERIAL:** Nuts in shells, hard candies, flaked products

CAPACITY: 4 oz. to 1½ lbs. (220 cubic inches)

PRODUCTION: 15 to 25 per minute

OPERATORS: One

Filling by net weight.

Write for literature on . . .

S&S CONVEYOR NET WEIGHT SCALE

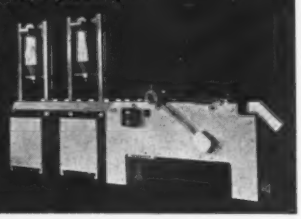
6 **MATERIAL:** Powders, cereals, seeds, chemicals, etc.

CAPACITY: Envelopes 2" to 8" high, when closed

PRODUCTION: 60 to 120 per minute

OPERATORS: None. Entirely automatic. Connects with and seals filled envelopes from powder filler or net weight scale

Write for literature on . . .



S&S BAG AND ENVELOPE SEALER

7 **MATERIAL:** All food and grocery products in cartons

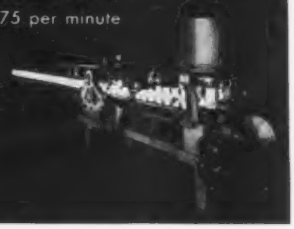
CAPACITY: Maximum carton: 10½" x 6½" x 4½"
Minimum carton: 2¾" x 1⅝" x ¾"

PRODUCTION: 40 to 75 per minute

OPERATORS: One

Several Models. Feeds cartons, bottom seals, fills, top seals.

Write for literature on . . .



S&S NEVERSTOP CARTON FILLER & SEALER

8 **MATERIAL:** All food and grocery products

CAPACITY: Maximum carton: 10" x 6½" x 4"
. . . . . Minimum carton: 3¾" x 1½" x 1"

PRODUCTION: 60 to 70 per minute

OPERATORS: One

Automatically tight-wraps carton with printed label, after it is filled and sealed, making attractive, siftless tight-wrapped package for all products.

Write for literature on . . .

S&S AUTOMATIC TIGHT WRAPPER

STOKES & SMITH Co
FRANKFORD PHILADELPHIA

XUM

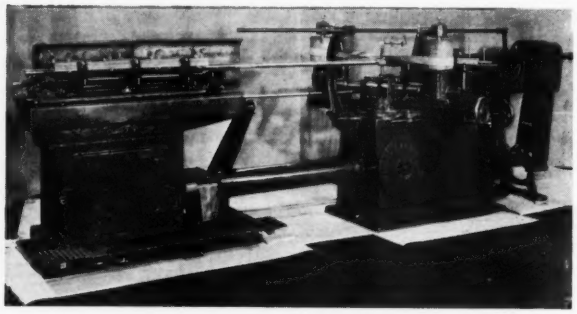
Fibre Can Making Machinery

In the elementary semi-automatic process of making fibre cans, paperboard was first passed through a sheet gluing machine where the adhesive was applied, leaving the uncoated section required for the inside ply. This sheet was laid on a forked rack, thus enabling the adhesive to obtain its proper tack for rapid adhesion.

The sheet stock was then taken to the tube-rolling machine. The uncoated section of the sheet stock was inserted into the lip of a collapsible mandrel on the rolling machine, and the treadle pressed, closing the lip of mandrel and simultaneously starting the mandrel in motion. The tubes were then wound to conform with the mandrel dimensions. The number of ply or wall thickness of tube is determined by the length of the sheet being wound. The tubes or can bodies are usually rolled into lengths approximately 36 in. long. It is the regular practice to cut these tubes to individual body can heights on the same machine, as this machinery unit is equipped with a cutting bar which holds a series of cutting knives. The location of these knives on the knife-bar severs the long tube into preset lengths.

Acknowledgment is made to W. H. Fricker of the M. D. Knowlton Co. for aid in the preparation of this article.

1. Automatic convolute winding machine. Photo courtesy M. D. Knowlton Co. **2.** Spiral tube winder with automatic tube cut-off device. Photo courtesy Samuel M. Langston Co.



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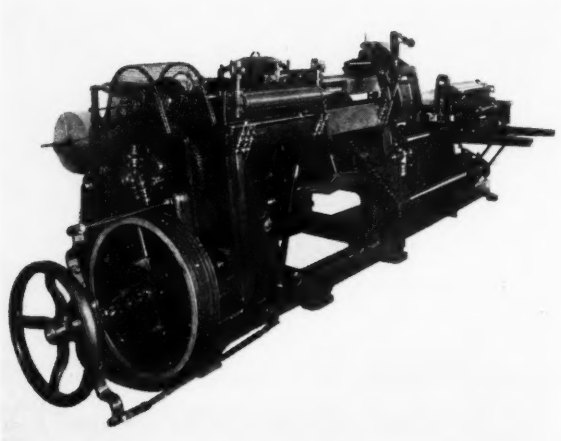

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The reception of the fibre-bodied can by manufacturers and packers alike was so outstanding that fully automatic equipment was designed and built to obtain increased production of the can bodies. The spiral tube winding machine was developed for taking paper in ribbon form from the roll, winding it over a mandrel to exact diameter requirements and to the wall thickness desired, this wall thickness being determined by the thickness of the ribbon board stock and the number of ply or ribbons being applied.

This means that the paper tube is automatically wound to accurate diameter and of correct wall thickness. An independent saw or cut-off, put in straight line with the winder, severs this traveling spiral tube body. The saw mechanism travels on a carriage with the tube thereby not retarding travel of tube while in process of cutting. This independent saw cut-off is located at proper distance from the winder to permit tube to dry sufficiently before actual cutting. The next operation is that of recutting this 36-in. length tube into can-body lengths. This is done on a recutting machine where the tube is merely slipped onto a mandrel. The cutting arbor with knives properly located comes into contact with the revolving tube and severs same into predetermined lengths.

Spiral tube equipment, as it is designed and built today has every convenience for obtaining high-class tubing with snug butts or joints, as well as applying high-priced finishing paper to the outside of the tube, which enables the user to manufacture not only plain fibre can products, but also high-class cosmetic powder boxes. The spiral tuber as outlined above, with special combination glue and paraffin units, is used extensively in the manufacturing of food containers such as used for packaging ice cream and delicatessen products such as salads, baked beans, etc.

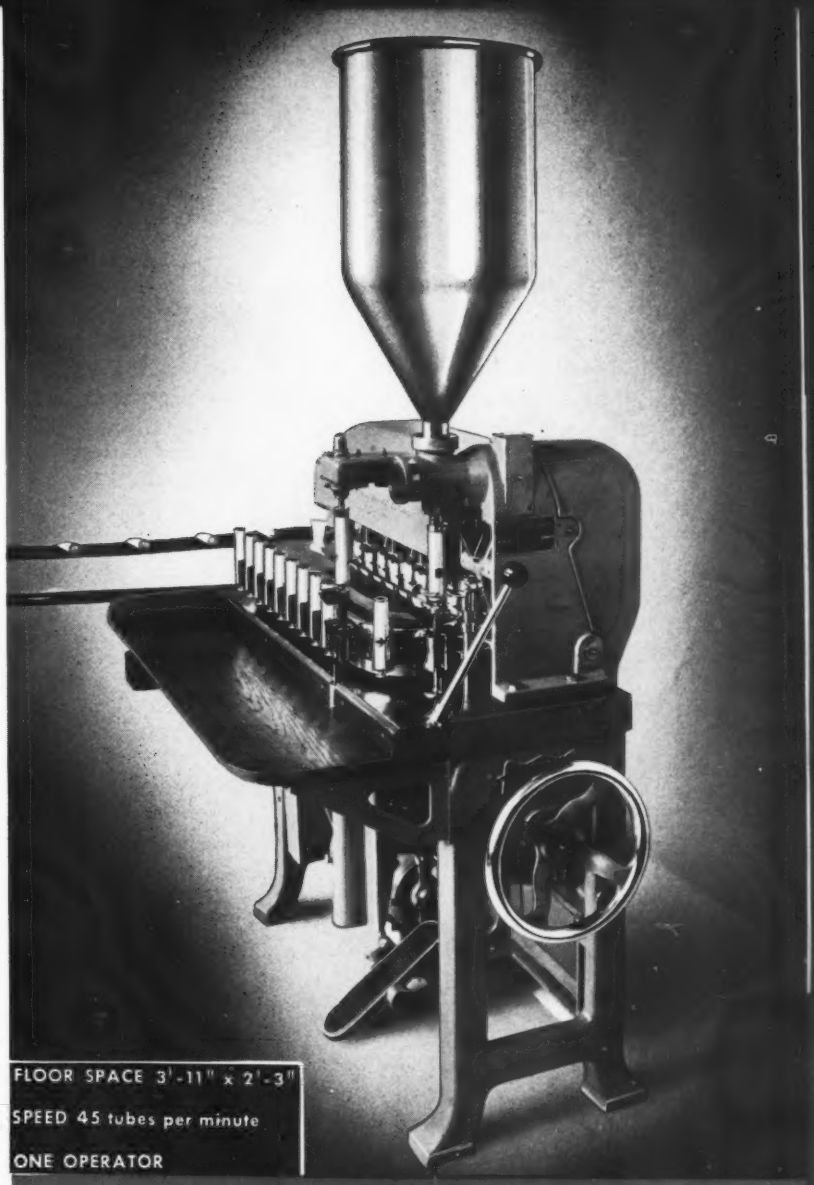
Cross References: Fibre-Bodied Containers, page 98; Printed and Lithographed Labels, page 300; General Considerations in Machine Installation, page 378; Weighing and Filling Dry Products, page 381; Types and Functions of Adhesives, page 474; Metal and Fibre Drums, page 530.

THE ARENCO TUBE FILLER

Fills, closes and seals collapsible tubes . . . interchangeable to handle pastes, creams, lotions and liquids . . .

FEATURES . . .

- Clean filling—no spattering of inside closure wall—no material trapped in fold.
- Positively correct quantity in each tube.
- No material delivered from filling nozzle when tube is missing.
- Simple adjustments for different quantities and easy changing from one tube size to another.
- Shaped tube holders—shapes of tubes and folds always uniform.
- Ample passage for material—no valves—no squeezing to interfere with consistency and viscosity of material.
- All parts of machine easily accessible for control, lubrication, and cleaning.
- Automatic cap tightener.
- Quiet in operation.



FLOOR SPACE 3'-11" x 2'-3"
SPEED 45 tubes per minute
ONE OPERATOR

TYPES OF ARENCO CLOSURES

1 2 3 4

Plain, Imprinted Crimp, or Fluted Crimp Closures.

AN EXAMPLE

of a special Arenco job —1/2 pint single service coffee-cream tube. There are Arenco machines for many other packaging operations and for special and exacting requirements in other fields.

OTHER SPECIAL FEATURES

- Special valve for the filling nozzle for feeding of semi-fluid and easy flowing materials.
- Automatic safety clutch. Machine stops instantly in case of damaged tube or other obstruction.
- Automatic tube cleaning before filling.
- Automatic registry of print; automatic batch numbering and secret marking.

ARENCO

THE ARENCO MACHINE COMPANY
25 WEST 43rd STREET NEW YORK, N. Y.

XUM

Transparent Boxmaking Machinery

Transparent boxmaking machinery is all of recent development and much of it of an experimental nature. Many operations are still manual, but an increasing number of semi-automatic and automatic machines have been developed within the last year.

The cutting of blanks is usually performed on paper cutting machines or by the use of "chop-out" dies and power presses. Cementing operations are performed with the aid of mandrels and jigs, although some semi-automatic equipment has been developed to form and hold containers while cement is applied and set. Creasing, scoring and folding is done upon machines which consist essentially of electrically heated creasing bars operated by foot pedal against a sponge-rubber pad. Adjustable stops behind the creasing bar locate the sheet.

Straight edge beaders of the intermittent type utilize foot operated clamp bars to locate and hold the sheet in the desired position while an electrically heated draw-die moves parallel to the edge of the sheet and molds a circular bead of the desired diameter. Such machines are made in a range of sizes capable of taking up to a 50-in. sheet length.

Continuous edge beaders take rolled material and apply a bead to either one or both edges of the sheet as desired. These machines are made in a variety of models, but consist essentially of devices to draw the web through one or more forming dies which turn the bead. The dies are usually electrically heated with accurate heat controls.

Drawing presses are available in both hydraulic and mechanically actuated types. The simpler varieties are hand operated and hand fed with individual blanks. Fully automatic equipment, with multi-stage deep dies, has been designed for work on rolled material. This latter type cuts the blank from the sheet, draws the blank into the desired shape and trims and ejects the finished drawing automatically. Accurate heat and pressure control mechanisms are essential for the proper working of such machines.

Since this field of machinery engineering is in so early a stage of development, packagers are advised to consult with material suppliers to determine the practicability of any machine for the particular type of material with which it is contemplated to use the machine.

Cross References: Rigid Transparent Containers, page 104; Rigid Transparent Displays, page 150; Types and Functions of Adhesives, page 474; Roll Leaf Stamping and Embossing, page 506.

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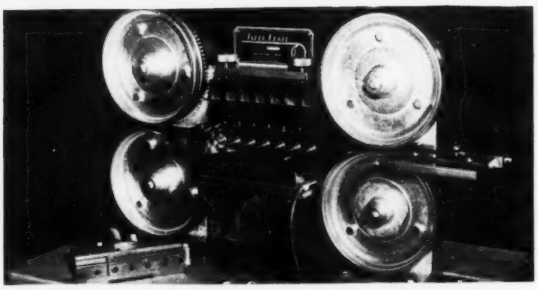

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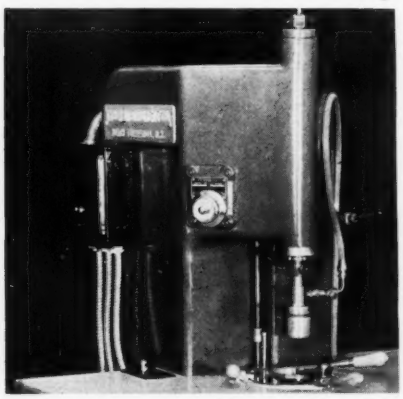

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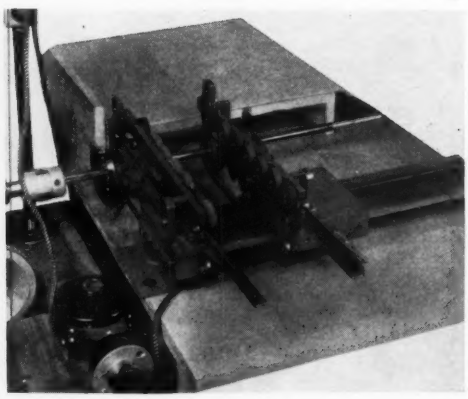

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1. Single edge beader with interchangeable dies for 1/16 in. and 1/8 in. diameter beads. **2.** Double edge beader for cut blanks or continuous strip. **3.** Hydraulically actuated deep drawing press with multi-stage dies. Machine is equipped with accurate heat control mechanism. Photos courtesy Taber Instrument Co. **4.** Double edge beader adjustable for various widths of material. Equipped with heat control mechanisms. Courtesy Able Machine & Tool Works.

ADHESIVES

Section Thirteen

Pages 473 to 488

TYPES AND FUNCTIONS OF ADHESIVES

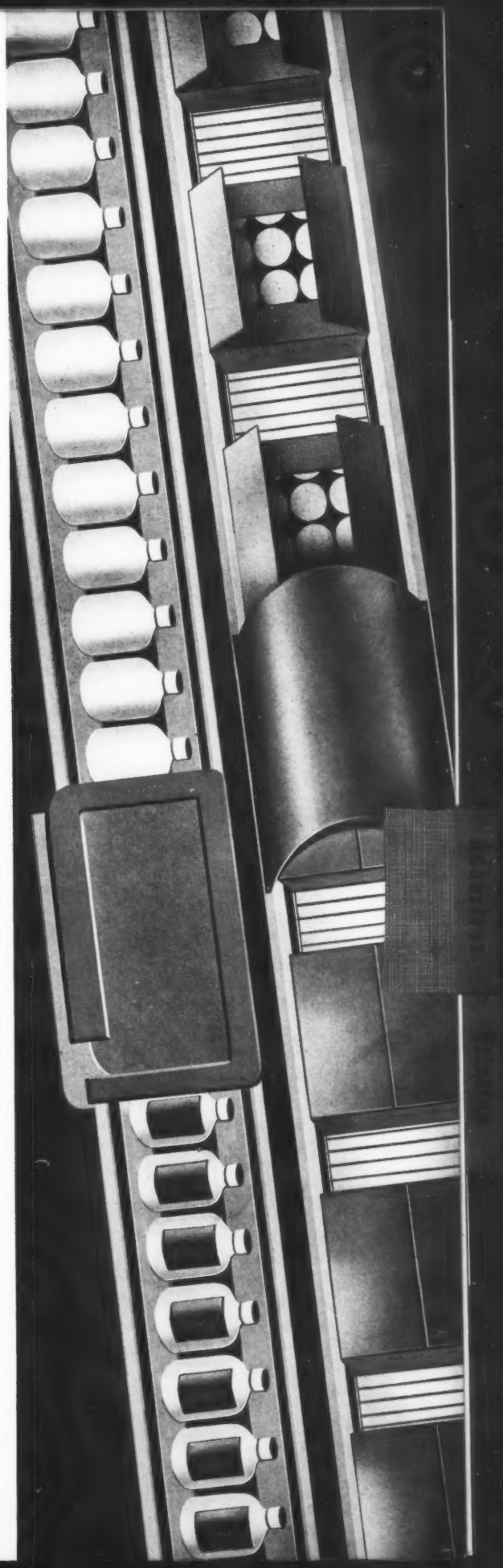
SODIUM SILICATE ADHESIVES

STARCH DERIVED ADHESIVES

CELLULOSE AND SYNTHETIC RESIN ADHESIVES

GELATINE AND GLUE ADHESIVES

HOT MELT ADHESIVES



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Types and Functions of Adhesives

During the last 15 years and particularly during the last five years, the packaging industry's demands upon the adhesive suppliers have grown tremendously. Not only has this growth been reflected in the volume of adhesives utilized, but it has forced adhesive suppliers to develop whole groups of new adhesive formulae to meet the specialized conditions presented by high-speed machinery, by new materials of packaging and by increasingly rigid demands for better adhesives.

Types of Adhesives

There is no general agreement among adhesive experts as to the exact form of classification which should be utilized in discussing adhesive types. However, the nearest approach to general agreement breaks the entire adhesive family, as used in packaging, down into five principal groups. Each of these is treated in detail in the articles which follow in this section. To examine the field as a whole, however, let us list the groups and their essential qualities.

Sodium silicate adhesives are made of sodium oxide and silica. They have a relatively low cost, are odorless, have a medium moisture resistance and a high bonding strength. They use aqueous solvents and are applied cold. They are neither toxic nor inflammable and since they are inorganic, they do not support the growth of organisms—a most important quality in certain cases. They are hard and brittle and impart rigidity and strength to the materials they join. They are alkaline and hence may attack inks and colors used on labels with the exceptions of black and white or specially compounded alkali resistant inks. Their major application in packaging is in fabrication of corrugated board and in the sealing of corrugated cases, although they have many other applications.

Starch derived adhesives are made of dextrine and starch specially treated for solubility. Their cost ranges from low to medium on the relative scale. Most starch derived adhesives are odorless, although some may have a slight odor. They have a medium bonding strength and moisture resistance. Aqueous solvents are used and the adhesive is applied cold.

Cellulose and synthetic resin adhesives are made of cellulose acetate or cellulose nitrate, wood rosin, coumarone resin, dammar gum or ester gums or resins of vinyl urea formaldehyde or acrylic acid. They are relatively high in cost, have a strong odor, have high moisture resistance and bonding strengths, use non-aqueous solvents and are applied cold.

Gelatine and glue adhesives are made of hot water extracts of nitrogenous animal tissues. They are relatively high in cost. Odor may vary according to the type of formulation. Manufacturers are able to formulate glues with slight odors or virtually no odor at all when this is desired. Their resistance to moisture is in the medium range, while their bonding strength varies above the median. Aqueous solvents are utilized and they are usually applied hot.

Hot melt adhesives are made of paraffin, rubber, ceresin, synthetic resins or cellulose esters. They are available in types covering virtually the full cost range, from low to high. Most types are odorless, but some have a slight odor. Hot melt adhesives have high moisture resistance. Bonding strengths vary greatly according to the formulation. Solvents are not necessary for hot melt adhesives. As their name implies, they are applied hot.

There are two subordinate groups of adhesives not easily classified in any of the above named groups. The first of these is the protein family made from casein or the albumin derived from blood or eggs. Of medium cost, they have high moisture resistance and bonding strength, varying from medium to high according to formulation. Most types are odorless, though some have a slight odor. Aqueous solvents are utilized and application may be made either cold or hot.

The second subordinate type is the rubber group made of latex, vulcanized rubber or rubber resins. These may exist as either aqueous or non-aqueous solutions. Their cost is toward the higher portion of the scale and they are characterized by relatively strong odors. They produce films which are resistant to moisture, alkalies and dilute acids. They have a medium bonding strength and are usually applied cold.

The Process of Adhesion

Defining adhesives is not as simple as it seems at first glance. Perhaps the simplest definition of adhesive is that it is a substance which will wet two surfaces and form a solid material, holding the two tenaciously

Cross References: Folding and Display Cartons, page 35; Set-Up Paper Covered Boxes, page 74; Paper Containers for Liquids, page 90; Fibre-Bodied Containers, page 98; Rigid Transparent Containers, page 104; Fancy Boxmaking Papers, page 160; Protective Materials—General Considerations, page 177; Protective Foils, page 180; Waxed Papers: Types and Uses, page 181; Protective Glassine Papers, page 184; Vegetable Parchments: Types and Uses, page 185; Transparent Wrapping Sheeting, page 188; Laminating and Combining, page 193; Resin Treated Papers, page 201; Bag Closing and Sealing Methods, page 212; Printed and Lithographed Labels, page 300; Labeling Machines and Devices, page 420; Wrapping Equipment, page 426, Tight-Wrapping Equipment, page 434; Case Packing and Sealing Machinery, page 450; Bag Making Machinery, page 462; Folding Boxmaking Machinery, page 465; Set-Up Boxmaking Machinery, page 466; Fibre Can Making Machinery, page 470; Sodium Silicate Adhesives, page 480; Starch Derived Adhesives, page 482; Cellulose and Synthetic Resin Adhesives, page 484; Gelatine and Glue Adhesives, page 486; Hot Melt Adhesives, page 488; Coating, Laminating and Embossing Equipment, page 508; Shipping Methods and Considerations, page 512; Corrugated and Solid-Fibre Cases, page 516; Tape Sealing Shipments, page 542.

Acknowledgment is made to A. B. Crowell, Jr., of the Union Paste Co. and Gerard B. Cloran of the National Adhesives Division of National Starch Products, Inc., for aid in the preparation of material upon which this article is based.

You Get Exactly What You Pay For!

"Why do you charge 5¢ a glass for your lemonade when the other boy charges only 2¢?" asked Mr. Sharp, as he sipped his second glass.

"*The cat fell in his*," answered Truthful Tommy.

* * *

When you're tempted to make an apparent saving by buying cheap glues, remember there's usually a "cat" in the background—even though you don't realize it *at the time!*

National Adhesives

DIVISION OF

National Starch Products Inc.

820 GREENWICH ST., NEW YORK—CHICAGO—PHILADELPHIA—BOSTON—SAN FRANCISCO—and All Principal Cities

XUM

together. The two substances to be joined may be identical in nature or may be of widely varying composition. The basic problem in the selection of formulations for adhesives is therefore one of securing a joining material suited to the particular material or materials which must be joined.

However, adhesives must possess many other properties and, because of the varying demands upon adhesives, literally thousands of formulations have been developed. Cracker boxes, for instance, must be sealed with an odorless substance to avoid contamination of the product within. Adhesives for metallic foils or similar non-absorbent materials must require special properties. In many packaging utilizations, adhesives must be moisture-proof. Thus it will be seen that the choice of adhesives is determined not merely by the materials to be joined, but also by conditions which the formed materials and the adhesives will meet in their life on the package.

A further consideration involves the efficiency of application of the adhesive. This consideration becomes particularly acute when high-speed machinery is used to apply labels or wraps. Some adhesives are particularly suited to machine operation at high speeds, while others are not so well adjusted for compliance to this particular factor.

The Mechanics of Adhesion

Packaging materials may be grouped into two types, non-porous or non-absorbing materials or the porous or absorbing group. Included in the former are glass, tinplate, metal foils and transparent sheetings of cellulose as well as rubber base materials. The porous group includes cardboards, papers, wood and a wide range of other materials.

These two types of materials present differing adhesive problems. A third problem is presented when materials of the two groups are to be joined together.

In joining non-porous materials, adhesives operate by a phenomenon known as absorption—a physical rather than a chemical action. A molecular attraction or affinity exists between the adhesive and the surface of the packaging materials. The stickiness of the adhesive in such cases is dependent upon a number of factors including the fineness of division of the particles forming the adhesive and the total surface area of these particles. The affinity between the adhesive and the non-porous material may be increased by the addition of a wetting agent which permits more direct contact between the adhesive solution and the surface to which it is applied.

In joining porous surfaces, a mechanical adhesion occurs, i.e., the adhesive particles become embedded in the pores or spaces between the fibres of the porous material. The adhesive thus firmly anchors itself into both porous surfaces.

In cases where the adhesive is required to join non-porous and porous materials, both qualities are required in the same adhesive which must be capable of achieving absorption in one case and mechanical embedding in the other instance.

Application of Adhesives

A number of methods are available for applying adhesives. The simplest of these is hand application utilizing a brush and paste pot after the traditional manner of the old fashioned shipping room. This method, of course, cannot be utilized for most packaging purposes where highly mechanized lines of equipment are in use.

The second method involves the use of a semi-automatic device consisting of a roller which dips into the adhesive, revolving in the adhesive bath. A number of ways of causing the roller to transfer its adhesive to the object requiring it have been developed and this principle is incorporated in a number of machines. Such transference may be made to either of the two surfaces to be joined or to both of them. Thus labeling machines sometimes apply the adhesive to the bottle and are sometimes designed to apply the adhesive to the label. These sealing machines frequently apply their adhesive to both of the surfaces that will join.

The third method involves the transfer of adhesives to selected spots or areas on the web of packaging material. Here a roller dips into the adhesive and revolves therein. The quantity of adhesive picked up by the roller is usually controlled by a scraper-knife or doctor blade. Revolving adjacent to the roller is another device so designed as to intermittently come in contact with the roller and then to turn so as to come in contact with the selected portion of the moving web. The shape of this latter device, the manner in which it is controlled and the motion of the web would determine the position and the coverage achieved by the adhesive.

Whatever the device utilized, however, it is essential that the adhesive be applied in a continuous film of uniform thickness and that exactly the right quantity of adhesive be applied. The application of too great a quantity of adhesive is frequently quite as bad as the application of too small a quantity. In the former instance, the adhesive will serve to hold the wrapping materials apart, drying will take a longer time and may be incomplete. A poor bond will probably result and an unsightly package may be obtained.

An insufficient application of adhesive will not have sufficient strength to withstand stresses which the package will undergo and will probably form a discontinuous film further contributing to the lack of strength. A similar condition will occur if bubbles are permitted to form in the adhesive film due to excessive agitation of the adhesive. Such bubbles obviously reduce the area of the surface which the adhesive actually reaches.

To obtain greater mechanical joint strength, a number of methods are available. If the adhesive coat on the two surfaces is allowed to thicken or partially dry before the joint is formed, better adhesion may be secured. In some cases, manufacturers use a diluted solution of the adhesive as a first coat on the materials. This is allowed to dry and then a second coat of adhesive applied to make the joint.

In joining metal foils, adhesives are sometimes used containing free acid or alkali. These serve to roughen

WILLIAMSON

Cold Odorless ADHESIVES

High Speed Machine Sealing and Labeling

THE cost of the glue is only a very small part of the total packaging cost, but the importance of the glue in the final result is such that it is false economy to use any but the best available adhesive. The best adhesive is one which properly seals your packages, and gives fast, uniform, uninterrupted production.

Williamson adhesives are made of selected ingredients from all over the world. They are accurately weighed and metered, and processed under automatic temperature control. Their viscosity is controlled by an electric viscosimeter, and every pound of glue is pumped through a mechanical filter. This assures a smooth, uniform quality product that works steadily on high speed sealing and labeling machines.

A full line of Williamson adhesives is available for all types of boxboard, carton stock, paper labels and wrapping materials such as foil, waxed paper, cellophane and other transparent sheets.

Tell us your requirements and a sample of the proper adhesive for your purpose will be sent you.

WILLIAMSON ADHESIVES, INC.

2350 West 18th Street — Established 1914 — Chicago, Illinois

We do not believe there is any substitute for quality

XUM

the foil surfaces by etching and thus to afford greater purchase for the adhesive solution. This roughening is very slight and does not usually have any undesirable effect on the strength of the metal foil.

Bubbles present one of the great problems in the application of adhesives, yet one of the most easily solved. They may be produced in the actual act of application. On the other hand, they may occur as foam in the adhesive caused by agitation induced by the adhesive transfer device. This occurrence is particularly notable when the transfer device is driven at a rate faster than anticipated in the machine design. The condition can frequently be cured by adjustments in the viscosity or the temperature of the adhesive or adjustments of the transfer device itself. Most often, time is the cause, due to the allowance of insufficient time for the sealing operation. In some cases, the formulation of the adhesive itself may require adjustment. The solution can usually be arrived at by one means or another without great difficulty and with the cooperation of the machine producer and the adhesive supplier, who are usually well versed in the peculiarities of every problem.

Failure of adhesive joints is frequently caused by insufficient drying. In some cases, this indicates that too great a quantity of adhesive is being used for the joint, since it is obvious that the greater the quantity of adhesive the longer the period required for the joint to become dry. Temperature and humidity conditions may likewise affect drying. Adhesive application is essentially a matter of compromise between the various conditions affecting the job. On the one hand, the most rapid production is desired. On the other, the manufacturer requires a joint of sufficient strength to carry the package past all hazards in use. Thus, the adhesive must be formulated to provide the most profitable compromise between these two factors and adhesive manufacturers—having so wide a range of materials to work with—have been uniquely successful in developing formulation to meet virtually every condition.

Special Adhesive Problems

Most window cartons that are manufactured today utilize transparent cellulose films. Cellulose acetate particularly is frequently utilized because it is not affected by atmospheric changes and therefore produces a minimum of carton distortion. Moisture-proof viscose film is generally used where atmospheric protection is necessary against the transmission of moisture vapor.

Cellulose adhesives that are basically nitro-cellulose, resins and plasticizers, with slow evaporating solvents, are exclusively used for almost all window carton operation. Where standard grades of boxboard, such as newsback, chipback or manilaback board are involved, most all of these standard adhesives, as manufactured today, are acceptable.

For the last two or three years, special types of lined board have been introduced into the window carton field. These boards are utilized mostly for packaging bakery products. The liners are generally imitation parchment, opaque glassine or some sort of other types of grease-proof papers. In this instance, resins must be adjusted to handle the same properly so as to obtain good gearing adhesion over a period of several months.

Factory Considerations

While technical problems regarding the specification of adhesives are best solved by direct consultation with adhesive suppliers' experts, there are numerous problems which can be easily solved by the observance of a few simple rules such as those which follow:

Dilution: If adhesives are thinned beyond the limitations outlined by the supplier, the glue solids will be carried too deeply into the stock, leaving an inadequate coating on the surface to provide a proper bond. In other words, excessive dilution will destroy the *film continuity* essential to adhesion. On the other hand, an inadequate dilution may prevent the degree of penetration necessary for secure anchorage. Therefore, dilutions must be accurate for satisfactory results.

Application: If a thick film of glue is applied, the speed with which the adhesive sets will be retarded and, accordingly, more time for deep penetration provided. Since excessive penetration is to be avoided—always apply a thin, even film.

Glue Temperature: If adhesives are chilled by exposure to low temperatures, they assume an artificially heavy body which generally induces the user to add more than the specified amount of water or other diluent. Therefore, all adhesives should be brought to normal room temperature before they are thinned. Since heat will reduce the viscosity of a liquid glue, a slightly lesser dilution should be used in summer than in winter. Carrying this thought further, it is possible, by heating glue, to attain a proper working consistency without dilution or with a reduced dilution and thereby increase the setting and drying speeds. This is sometimes desirable where extremely short compression is provided or where it is necessary to limit penetration into very absorbent surfaces.

Contact: One of the essentials of adhesion is proper contact, so that sufficient pressure to insure an even meeting of the surfaces is necessary. When sealing rough surfaces, greater pressure should be used than when sealing smooth surfaces. However, excessive pressure either forces the glue solids into porous stocks or the glue film from between non-porous surfaces—thus destroying film continuity and adhesion. The degree of pressure, therefore, depends upon the character of the surfaces involved as well as the nature of the adhesive used. Glues of the cohesive, gelatinous type have more durable filming qualities than dextrine types and consequently withstand higher pressures.

Surface Temperature: If the surface temperature is colder than the glue, the adhesive may chill before a secure anchorage is obtained and if the surface is warmer, it may decrease the viscosity of the glue sufficiently to encourage excessive penetration. Wherever possible, both the glue and the surfaces to which it is applied should be at normal room temperature when the gluing takes place.

PRODUCTS AND LABELS

make the values

Your repeat sales are built into your product, right in your factory. Your label identifies and guarantees your output. What happens *after your product leaves the factory?* Adhesives are low-cost insurance against loss of identity — or messy identification which builds the wrong impression. They represent less than 3% of your costs. You can afford the best!

Adhesives are our whole business. We have 55 years of pioneering experience. Today there are some 8500 adhesive formulæ on file in Arabol laboratories, of which 900 are in active demand — by several thousand manufacturers — in a hundred different industries.

The Arabol Representative who calls on your firm is qualified by long and wide experience to help you fill your requirements, old or new; to help you find new economies and new applications. He is a practical man who can work with you in your factory. And at all times, he can call upon any of three laboratories for quick action on new or special needs. See your Arabol Representative when he calls. Let him tell you of current developments in gums, glues and pastes for your particular line of business.

And—for Your Offices—

You'll find sound values in the pastes, glues and mucilages made by a firm with 55 years' experience in supplying the adhesives requirements of a hundred industries. Write us for the name of the nearest Arabol distributor.

THE ARABOL MANUFACTURING CO.

PIONEERING SINCE 1885

Executive Offices: **110 East 42nd Street, New York, N.Y.**

Factories: . . Brooklyn • Chicago • San Francisco

Branch Offices or Warehouses:

Boston • Philadelphia • Seattle • Toronto • Montreal

Adhesives? . . . ARABOL!

Sodium Silicate Adhesives

Silicate of soda adhesives have been widely utilized for the manufacture of corrugated solid-fibre shipping containers for a number of reasons:

1. Silicates of soda are manufactured from raw materials of a mineral source, thus insuring ready availability near any point of consumption at stable prices.
2. The quality of the silicate adhesives remains constant both in transit and in storage, permitting shipment in drums or tank cars. Storage in tanks to supply the fabricating machines by either gravity flow or pumping is a decided convenience.
3. Silicate's properties are controlled by the manufacturer and supplied ready for use.
4. Silicate sets quickly through the loss of a small amount of water to give a bond many times stronger than the paper fibres which are being combined.
5. Silicate bonds are not subject to either mold or vermin attack.
6. The silicate bond in the discarded shipping cases is useful in the manufacture of paper as the alkalinity aids hydration in the beater and provides useful sizing effects if used with alum.

Improvements in operating efficiency and the use of lower cost paper stocks have required some modifications in the silicate adhesives. For instance, operating speeds of the combining units have been increased several fold and the new paper stocks produced are bulkier and lighter in weight. Also fourdrinier kraft papers have grown in popularity.

Originally, good bonding with silicate required the generous application of a uniform film, which penetrated into the two plies of paper in fairly equal amounts. Seasoning in piles, accumulated at the end of the combining unit, obtained the final set to bind the combination together. But with increased operating speeds and customers' demand for more prompt deliveries, the use of thinner films was required to obtain a more rapid set. The bulking of paper stocks caused trouble, as one ply would tend to absorb the silicate faster than the other, and all of the thin application was taken up by the bulked stock which left an insufficient bond for the other ply.

However, liquid silicates of soda were improved to meet these conditions, first by a change in the viscosity to give better control of penetration and, second, by increasing the ratio of silica to alkali so that a more rapid set could be obtained, thus forming the bond before the glue line could flow into the paper stock.

Another solution to the problem was obtained by mixing clay with silicate of soda. Small amounts of water are added to the silicate to lower the viscosity (the resistance to flow) which thus provides more rapid wetting and penetration into the paper. The clay, which is dispersed in this diluted silicate, filters out to form quickly such a dense glue line that additional liquid cannot pass through the paper. This gives a rapid set as this dense film has sufficient strength to hold the plies together during slitting, scoring and cutting at high operating speeds. Added clay also has the advantage of increasing the solid content of the glue line, consequently the freshly combined "green" board is more rigid and more able to withstand the crushing which is apt to occur in handling, printing and other operations. Special manufacturing methods permit shipment of such mixtures of silicate and clay without any difficulty. Storage in tanks is no problem, provided moderate agitation is secured by utilizing either circulation or some other similar simple method.

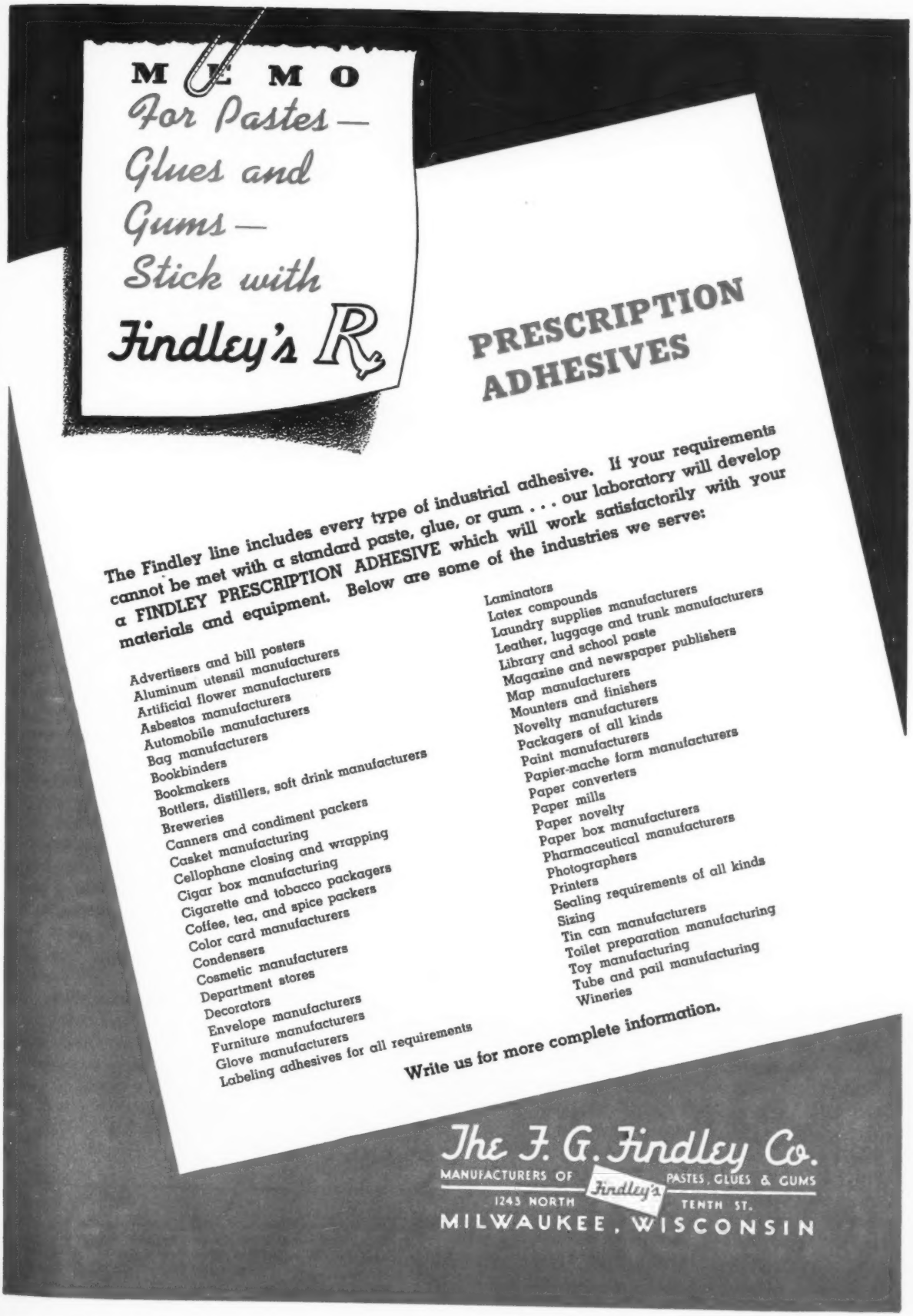
Silicate of soda is a soluble glass and, upon drying in the glue line, the silicate solution again becomes glass. As such, it is a strong, rigid layer paralleling the tips of the corrugations or an equally strong rigid plate laminated between the plies of a solid fibre combination. This rigid layer reinforces the box against stacking loads in a warehouse or against stresses from shifting occurring in transit. Boxes which must withstand severe punishment are sometimes given a heavy application of silicate. Such an excess, of course, may retard the rate of set, but it does provide extra rigidity in the box to protect the contents from damage because of failure under shipping and storage hazards.

One limitation of the silicate adhesives is the fact that they are mildly alkaline. For a large proportion of the corrugated boxes made with silicate adhesives, good plant practice, which requires drying of the board, is necessary. Occasionally boxboard is subjected to very high humidities over a considerable period of time and small amounts of the alkali migrate through light-weight or poorly formed paper stocks which causes desizing and subsequent staining. The use of well-formed paper stocks practically eliminates the staining, although a cheap, preventative coating of ammonium sulfate restricts alkali migration in severe cases.

Silicate of soda may be utilized for the sealing of flaps of corrugated containers, as well as in the manufacture of such units. Hand or machine application may be used to apply a thin film to the inside flaps of the boxes. The silicate is available in a variety of grades to meet different shipping room conditions.

Cross References: Types and Functions of Adhesives, page 474; Starch Derived Adhesives, page 482; Cellulose and Synthetic Resin Adhesives, page 484; Gelatine and Glue Adhesives, page 486; Hot Melt Adhesives, page 488.

Acknowledgment is made to R. L. Kreyling of the Philadelphia Quartz Co. for generous aid in the preparation of this article.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Bookmakers
Bottlers, distillers, soft drink manufacturers
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Canners and condiment packers
Casket manufacturing
Cellophane closing and wrapping
Cigar box manufacturing
Cigarette and tobacco packagers
Coffee, tea, and spice packers
Color card manufacturers
Condensers
Cosmetic manufacturers
Department stores
Decorators
Envelope manufacturers
Furniture manufacturers
Glove manufacturers
Labeling adhesives for all requirements
Laminators
Latex compounds
Laundry supplies manufacturers
Leather, luggage and trunk manufacturers
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Recently, the increase in the variety of linerboards used in the fabrication of containers has complicated sealing practices. Frequently the flaps are very absorbent, while at other times they almost completely resist penetration of the adhesive. For general hand sealing, such conditions are best met by the use of a more alkaline silicate than the average commercial type. It will not strike into the bulked, absorbent stocks because of its higher viscosity and, due to its alkalinity, takes hold of the hard surfaced board.

On automatically and semi-automatically operated sealing equipment, this same silicate adhesive gives satisfactory results. Under certain conditions, it becomes even more economical if diluted slightly (5 to 8 per cent) with water. Where high operating rates permit only a short period of time for the bond set under pressure, the use of silicate-clay adhesives should be considered as they offer the same advantages for sealing as they do for combining the plies of the board to make the corrugated paperboard.

Sometimes it is found that silicate will stick where it is not wanted, as on metal parts and table tops. In efficient production, the best practice avoids excessive silicate being splashed and spilled on machinery and equipment. For the easier removal of such sloppage that cannot be prevented, an application of Bakelite varnish to glue pots, metal guides and other machine parts has proved satisfactory. For overnight shutdowns, the glue pots are emptied and washed out or kept from skinning over by covering with a lid or a damp cloth.

Starch Derived Adhesives

The group of adhesives developed from vegetable materials including starches and dextrines is characterized by relatively low cost, the absence of odor and suitable moisture resistance and bonding strength. The preparation of adhesives from starch is accomplished in either of two ways. By one method, hydrolysis is effected with the aid of a caustic alkaline and without heat. A paste of a viscous ropey nature is formed as a result. The other method involves the treatment of the starch at higher temperature and the use of an oxidizing agent. The resultant product is a thicker and denser paste. Starch for dextrine adhesives is usually made either alkaline or acid in reaction in order to secure better adhesion and stability. A neutral starch paste has a reduced adhesive powder.

In the use of starch adhesives, care is necessary to avoid undue exposure to air. Starch derived adhesives which have stood too long exposed to the atmosphere tend either to become fluid and watery or to thicken unduly. This thickening action occurs particularly in highly concentrated solutions. In some cases, starch derived adhesives suffer from crystallization. This induces a substantial reduction in film strength. To overcome the difficulty, manufacturers frequently add hygroscopic materials.

Though the above description may sound as if starch adhesives and related types were difficult to use and difficult to maintain in good usable condition, this is not actually the case. A few simple precautions—such as are required for all adhesives—can solve most problems.

The strength of the joint obtained with starch base adhesives compares closely with that achieved from average grade animal glues. On the other hand, starch adhesives are far cheaper than animal glues, ranging in cost from approximately one-third to one-half as much as the latter type.

Acknowledgment is made to A. B. Crowell, Jr. of the Union Paste Co. and to Roger Dunn of Stein, Hall Mfg. Co. for aid in the preparation of the material upon which this article is based.

Starch Combined Corrugated

Corrugated board was formerly made almost entirely through the use of sodium silicate as the binding adhesive. Within the last few years, however, new types of starch adhesives have been developed for corrugated use. A number of advantages are claimed for both the adhesive and the resultant board.

Boxes made of starch combined board are reported to have high compression resistance, both in top to bottom height and end to end loading. The boards are also reported to have a high resistance to flat crushing and puncturing and to show a higher bond strength than can be obtained with mineral adhesives. The boards have been specified by packers of fruits, vegetables and similar products which are shipped in refrigerator cars and under high humidity conditions because of their ability to withstand high moisture-containing atmospheres.

Dextrine adhesives are available in two general types, prepared mixtures and cold water soluble mixtures. Prepared mixtures are usually derived from tapioca dextrine or corn dextrine. This is chemically treated with various acids or alkalies to formulate finished compounds that will fill the specific and specialized requirements of such applications as case sealing, carton sealing, set-up box manufacture, mounting and labeling.

Among other vegetable derived adhesives are specialized types used in the winding of paper tubes for fibre cans, bottle label adhesives to affix labels on bottles either by hand or machine, so-called "ice-proof" adhesives and tin pastes for applying labels to plain tin containers are likewise vegetable derived formulations.

Cross References: Types and Functions of Adhesives, page 474; Sodium Silicate Adhesives, page 480; Cellulose and Synthetic Resin Adhesives, page 484; Gelatine and Glue Adhesives, page 486; Hot Melt Adhesives page 488.

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Tube Glue		***Cellophane Glue***
Mounting Glue		***Carton Glue***
Envelope Gum		***Case Sealer***
Dextrine or Starch		***Bottle Labelling Glue***
Laminating Glue		***Tin Paste***

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REPRESENTATION IN PRINCIPAL FOREIGN MARKETS

Cellulose and Synthetic Resin Adhesives

Cellulose and synthetic resin adhesives find principal application in the sealing of transparent films such as moisture-proof viscose, plain viscose, cellulose acetate and rubber derivative films. Adhesives are made of a nitrate of cellulose plus plasticizers and resins with appropriate solvents for specific uses.

For transparent cellulose bags, solvents are used with a relatively slow rate of evaporation so as to control the viscosity of the adhesive in the glue pot on the bag making machine. The solvents are also generally of specially blended varieties designed to avoid penetration of the cellulose film, since such penetration would cause bleeding of the aniline or lacquer inks that are used in printing. To avoid penetration difficulties when moisture-proof cellulose films are being fabricated into bags, solvents of the quick evaporating type are generally utilized. These, however, are modified with some of the slower evaporating alcohols.

For the sealing of cellulose acetate films, special solvent blends are used which will attack and dissolve the cellulose acetate to a degree. The blend is so controlled as to insure adequate solvent penetration to obtain a strong and effective seal, without so great a penetration as to mar the appearance of the film or strength. These adhesives are applied with special fountain pen like applicators with felt wick tips and secure a strong seal that might be almost classified as a solvent weld.

A number of resins, including wood rosin, dammar gum and ester gum, are usually incorporated into cellulose acetate adhesives. This is done both because they are less expensive than cellulose derivatives and because they improve the density and thickness of the resulting adhesive film. To counteract the tendency of cellulose acetate adhesive toward brittleness, plasticizers are added.

Synthetic resin adhesives consist of solutions of synthetic resins in organic solvents having a low boiling point. Among the resins commonly used are those derived from acrylic acid esters, vinyl esters and urea formaldehydes.

In the lamination of transparent films to papers, printed surfaces and other types of stock, special synthetic resin adhesives are used. The adhesive is generally applied to the transparent film and the solvents evaporate as much as possible. Under heat and pressure, then, the adhesive treated film is sealed to the material with which it is to be combined. The heat is usually slightly below the 200 deg. F. point to avoid warping the acetate film. In some lamination operations, specially compounded latex adhesives are utilized.

Acknowledgment is made to A. B. Clunan of The Goodyear Tire & Rubber Co., Inc., to Gerard B. Cloran of the National Adhesives Division of National Starch Products, Inc. and to A. B. Crowell, Jr., of the Union Paste Co. for aid in the preparation of the data upon which this article is based. Acknowledgment is further made to R. K. Kennedy of the Carbide & Carbon Chemicals Corp. for aid in the preparation of data for the section on vinyl resin adhesives.

Lacquer adhesives, consisting basically of combinations of cellulose and synthetic resins, are today supplied in a mulsified form having the advantage of water dilution. This permits of special cost reductions and of reductions in the fire hazard, permitting use in open glue pots. The formulation of this type of adhesive is still in its relative infancy.

Vinyl Resin Adhesives

Vinyl resin adhesives comprise three general types: (1) polyvinyl acetate and its derivatives; (2) co-polymerized vinyl chloride and vinyl acetate; and (3) polyvinyl butyral. Polyvinyl acetates and their modifications are the most important to the packaging industry, the co-polymers and acetals being of minor importance as packaging adhesives. All are thermoplastic. Polyvinyl acetate is applied either as a cold adhesive from solution or as a thermoplastic adhesive from solution or a hot melt; the co-polymer and polyvinyl butyral can both be applied either from solution or in the form of film used as a laminating medium.

The trend on many package-sealing applications has been toward the use of these thermoplastic adhesives for several reasons. Polyvinyl acetate adhesives, in particular, lend themselves to high-speed production operations, for bonds are made quickly and easily. In addition, these adhesives can be heat-sealed over a relatively wide range of temperature. It is possible, for instance, to secure high tenacity with polyvinyl acetate even if the temperature exceeds the recommended value by as much as 100 deg. F.

Polyvinyl acetates are useful for bonding pulp products, textiles, wood, cellophane, glass and plastics. Polyvinyl acetates are made in five different viscosity ranges. All of these resins are water-white in color, odorless and tasteless, non-toxic, thermoplastic and burn only slowly, with a smoky flame. They are extremely stable to both heat and light and do not change their characteristics after long periods of aging. Although the chemical resistance of these resins is considerably less than that of the co-polymer resins, they resist dilute salt, acid or alkali solutions and are completely impervious to animal, vegetable or mineral oils and greases. Non-toxicity, water-white clarity, lack of taste and odor, high bond strength and good toughness also characterize these resins.

These resins can be plasticized readily to give almost

Cross References: Types and Functions of Adhesives, page 474; Sodium Silicate Adhesives, page 480; Starch Derived Adhesives, page 482; Gelatine and Glue Adhesives, page 486; Hot Melt Adhesives, page 488.

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Upaco research engineers have developed a number of unique and effective adhesives for the new materials in packaging, solving such difficult problems as adhesion to transparent cellulose surfaces, transparent lacquer coatings and glassine papers. Modern high-speed packaging machinery demands faster drying, more easily applied adhesives and here, again, Upaco researchers have come through with formulas to meet the demand.

Upaco engineers are at your service in the development of special-purpose adhesives for case, carton or bag-sealing, labeling, box-making or any of a hundred packaging processes. Our new research laboratories and production plant are ready to serve you even more effectively than before.

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any degree of flexibility. Most of the common lacquer type of plasticizers such as phthalates, phosphates, abietates and glycollates can be used, and, in general, much less plasticizer is required to impart a definite degree of flexibility in polyvinyl acetate than is required by cellulose nitrate.

When polyvinyl acetate is applied from solution, the most generally used solvents are ketones, esters, alcohols and aromatic hydrocarbons. When applied as a hot melt, low-viscosity polyvinyl acetate resin is usually employed and, in this connection, it should be pointed out that polyvinyl acetate, used as a hot melt, does not in itself melt. It must be modified with other plastics or resins to form the finished melt.

Methods of Application

In either case, the material can be applied to the stock in a continuous strip by a smooth roll or in spots, as required, by an intaglio roll. The adhesive can also be applied by knifing or dipping.

When applied as a cold adhesive, polyvinyl acetate solution is used in the same manner as ordinary cold-setting lacquer adhesives. The solution is applied to the stock and then allowed to dry until tacky. The bond is made by clamping the parts together until the adhesive is further dried, after which the clamps can be removed.

In thermoplastic fusion with these adhesives, to secure "tack" at the time the bond is to be made, use is often made of the thermoplastic properties of the resins. The solution is applied to one or both of the surfaces to be bonded and the solvent allowed to evaporate until the correct amount of "tack" is attained. A force-dry of 3 to 5 min. at 200 deg. F. is usually sufficient, or for faster evaporation, higher temperatures can be used. The surfaces are then laminated at approximately 250 deg. F. under as much pressure as the material will withstand.

Applications of Polyvinyl Acetate

Polyvinyl acetate resins are being used in a number of thermoplastic sealing operations. One of the most important applications is in the rapid mass production of fibre cartons that will withstand hard service. Outstanding applications are milk cartons, drinking cups, especially for hot drinks, in the sealing of cellophane bags, and cellophane to frozen food cartons, to mention only a few.

An interesting application of polyvinyl acetate adhesives has been bonding the side and bottom seams of hot-drink cups. These cups will hold boiling water without danger of the seams opening. In addition, the design of the cup making machine is simplified when thermoplastic adhesives are used, because the bond is instantaneous. Also, because the resin is colorless, the overlapping of the glue on the inside of the cup is not noticeable if the lap does not happen to fall in exact registry on the cup.

Since these resins will not tarnish metallic pigments, they are being used in metallic inks. In this application, their good color gives a clean, metallic finish. In addition, these resins have the characteristic of "leafing" metallic pigment to produce a good gloss and a good depth of color in the inks.

Gelatine and Glue Adhesives

While to the layman the terms adhesive and glue are synonomous, (with the latter word a more common one) the fact of the matter is that glues are merely one type of adhesive if considered in any strictly accurate sense. As one writer has described it, glues are very closely allied to gelatine, so much so, in fact, that gelatine may be considered a very pure glue while glue may be considered an impure gelatine.

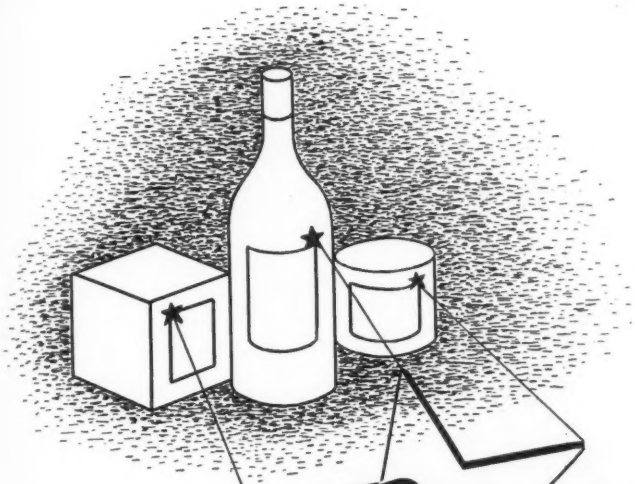
Pure gelatine has little application as an adhesive. Glues, however, have an extremely wide range of application. Both materials are obtained by hot water extraction from such animal tissues as hides and bones. The better grades of glue are extracted from hides. These adhesives set more rapidly and are more flexible than bone glues, having a higher melting point. Glue strength varies in direct proportion to the melting point, with the greater strength found among those glues having high melting points. Strength, however, decreases with the length of time the adhesive is heated in solution. For this reason, troughs for the heating of glues are generally designed to hold relatively small quantities of the material and are re-filled frequently as the heated material is withdrawn for application.

Adhesives of this type are quite hard. Under heat, they have a tendency to foam. This tendency is increased if undue agitation is caused by the mechanical spreader. Since foaming is a definitely undesirable quality, manufacturers frequently add small quantities of edible fats or oils to check the tendency.

Protein Adhesives

In a separate class are the protein adhesives formed from casein derived from milk and soy beans and albumin from blood and eggs. These represent one of the more

Cross References: Types and Functions of Adhesives, page 474; Sodium Silicate Adhesives, page 480; Starch Derived Adhesives, page 482; Cellulose and Synthetic Resin Adhesives, page 484; Hot Melt Adhesives, page 488.



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Boxes, cartons, bags that are glued with a Star adhesive are packages that can take punishment. They will withstand the hazards of merchandising. And they are weatherproof.

Heat will not soften their joints. Cold will not crystallize the adhesive, nor cause the glued parts to pull away. Dampness and actual moisture will not cause them to deteriorate. The same goes for Star stuck labels. Star Bottle Labeling Glues are positive insurance that your identity (in the form of your label) will stick wherever you apply them. In ice water, or under the sun's melting rays your label will adhere to the bottle or can upon which you have placed it.

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STAR Tin Paste
STAR Brightwood Gum
STAR Carton Sealing Glue
STAR Bench Paste
STAR Tube Glue
STAR Lap End Paste
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recently developed types of adhesives in the medium price range. They are utilized in aqueous solution and are applied either hot or cold.

Casein adhesives have a limited working life—usually between 6 and 12 hours. This term is used to describe the period between the preparation of the adhesive and the time when it becomes too thick to use. If the ash content of the casein is high, it is necessary to add a greater amount of water to yield an adhesive of standard viscosity. The increased water ration serves, however, to shorten the life of the solution.

Casein adhesives are very highly moisture resistant, a quality given to them by the lime they contain which limits their ability to absorb water. Once dried, they are able to resist intensely humid conditions and are, therefore, frequently specified for packages designed for export to the tropics and for containers that will meet with highly humid conditions.

On the scale of costs, casein adhesives stand far below animal glues. On the other hand, they are considerably more expensive than vegetable base adhesives. Their moisture resistant properties make them desirable in special instances despite the higher cost as compared with vegetable base adhesives.

So-called flexible glue adhesives and flexible gelatine adhesives are made of hide or bone glues combined with inert filler and hygroscopic plasticizers (such as glycerine) and with synthetic organic alcohols (such as ethylene glycol, diethylene glycol or sorbitol or manitol). Glues plasticized with these agents are usually compounded especially for specific purposes. Flexible glues are characterized by their non-warping qualities and hence are utilized especially in the manufacture of set-up paper boxes, for certain types of mountings and laminations.

Hot Melt Adhesives

The term hot melt adhesives covers a large family. All have the advantage of high moisture resistance, instantaneous sealing and the complete absence of water during application. Since the adhesives are literally melted for sealing purposes, no solvents are utilized.

This moisture resistance is one of the major reasons inducing the use of the hot melt group and these materials are most widely used in the form of coatings. When so used, they form moisture resistant papers or wrapping films which may be heat-sealed at any desired point. The materials are melted before being applied. The melt is then picked up by a roller—either a coating machine roller using circulating hot oil or a heated gravure roll. The roller heats the material to a temperature of 300 to 350 deg. F. before it goes on the web. A heated leveling bar or doctor blade smooths out the coating after it has been applied to the web, leaving a glossy, even surface.

With hot melt adhesives, there is no solvent to lose. All the material goes onto the paper. The coatings may be applied at high speeds—as much as 250 ft. per minute —since the problem of evaporation of the solvents is not present. Furthermore, fire damages and toxic effects upon workers are eliminated.

Hot melts are extremely resistant to fats, oils, greases, abrasion and scuffing.

Thermoplastic Heat-Seal Adhesives

In numerous applications where it is not desired to utilize a pre-coated film or paper, thermoplastic adhesives are applied to desired portions of bags or wraps. When the package has been filled or wrapped, applications of heat at desired points produces an effective seal.

Thermoplastic treated tapes have also been developed, utilizing the same principle. These are likewise applied by heat-sealing methods.

Latex Adhesives

Latex adhesives cover a great many fields where surfaces are difficult to seal. They set quickly and are permanently flexible. Many of the applications of latex adhesives involve the coating of two surfaces with the material. When brought into contact, these surfaces seal to each other under pressure. Sometimes the sealing is hastened by the addition of heat. An outstanding example of this sort is the self-sealing envelope in which flap and body have been pre-gummed, as it were, with the latex adhesive.

Natural water dispersions of rubber are often used alone as adhesives or used as the basis for general adhesives for sealing papers, leathers, textiles, etc. The materials are generally compounded for specific applications and there are several hundred types. Latex adhesives are being utilized for the sealing of rubber derivative sheetings. It has been found possible to secure a good bond between two derivative sheet surfaces by this method. Dispersions of reclaimed crude and synthetic rubber and rubber compounds are also used for purposes of sealing, similar to those in which latex adhesives are utilized. Thermoplastic rubber compounds for hot melt application are used in coating and laminating in the formulation of heat-sealing and thermoplastic adhesives.

Cross References: Types and Functions of Adhesives, page 474; Sodium Silicate Adhesives, page 480; Starch Derived Adhesives, page 482; Cellulose and Synthetic Resin Adhesives, page 484; Gelatine and Glue Adhesives, page 486.

PRINTING

Section Fourteen

Pages 489 to 510

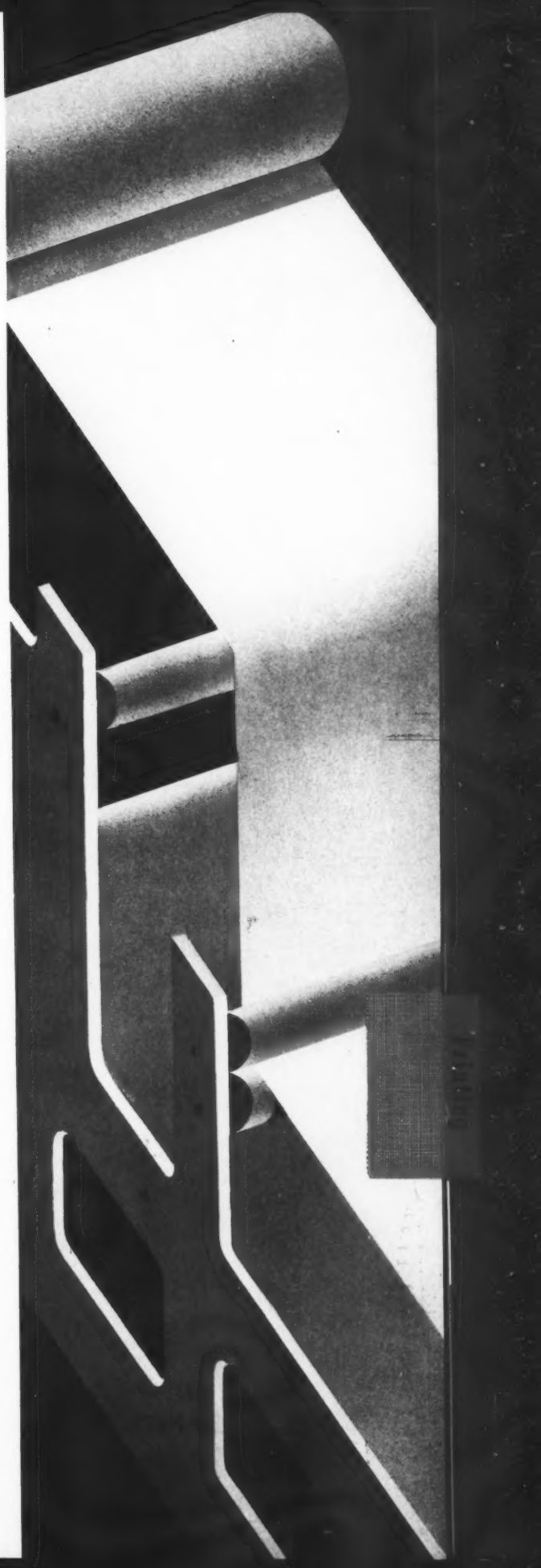
PACKAGE PRINTING MACHINERY

PRINTING INKS FOR PACKAGES

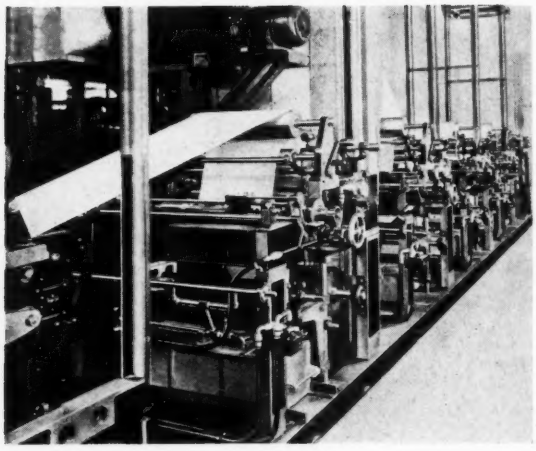
SURFACE COATINGS

ROLL LEAF STAMPING AND EMBOSSING

COATING, LAMINATING AND EMBOSSING EQUIPMENT



Package Printing Machinery



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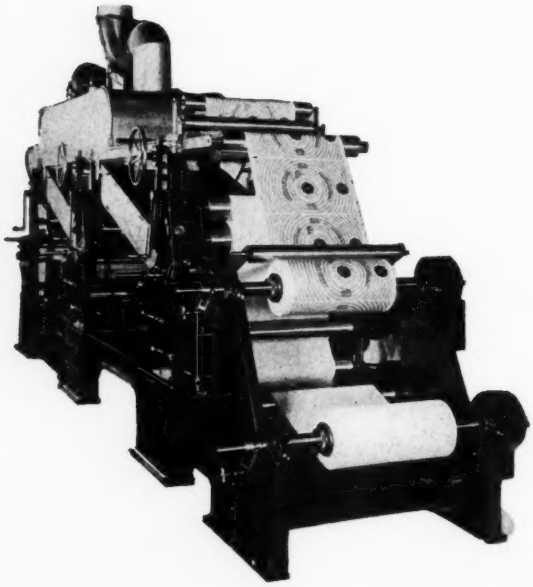

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In selecting package printing machinery some of the questions to be considered are:

1. What is the speed of the press?
2. How many colors can be printed?
3. Is the quality of printing satisfactory?
4. Can the new fast drying inks be used?
5. Can the press be changed over from one job to another quickly and economically?
6. How many sizes will it take?
7. What types of paper and board can be handled on the press?
8. What supplementary operations, such as coating, lacquering, etc., can be performed on the press?
9. Can the same press be used to re-wind, slit, cut sheet, punch, score and deliver the finished piece ready for use in subsequent packaging operations?
10. What economies will the equipment effect over present methods?

From the production viewpoint, automatic printing presses fall into two general classifications:

(1) Presses in which the paper is fed to the press in sheet form.

(2) Presses in which the paper is fed to the press in web form from a single continuous roll.

Acknowledgment is made to Alfred A. Morse for aid in the preparation of this article.

Cross References: Color and Reproduction Methods, page 16; Folding and Display Cartons, page 35; Specially Processed Cartons, page 68; Printed Transparent Sheeting, page 166; Waxed Papers: Types and Uses, page 181; Protective Glassine Papers, page 184; Vegetable Parchments: Types and Uses, page 185; Laminating and Combining, page 193; Resin Treated Papers, page 201; Can Decoration Processes, page 240; Printed and Lithographed Labels, page 300; Merchandising and Informative Tags, page 311; Package Inserts, page 314; General Considerations in Machine Installation, page 378; Labeling Machines and Devices, page 420; Bag Making Machinery, page 462; Folding Boxmaking Machinery, page 465; Set-Up Boxmaking Machinery, page 466; Printing Inks for Packages, page 496; Surface Coatings, page 502; Roll Leaf Stamping and Embossing, page 506; Coating, Laminating and Embossing Equipment, page 508.

1. Champlain gravure press for multicolor work. Web feed. **2.** Three-color Hyroto rotogravure printing press. **3.** Battery of web-fed presses at plant of paper container manufacturer. Printing and cutting of container blanks are performed automatically and completely on these machines working directly from roll stock.

CHAMPLAIN PRESSES
REDUCE PRODUCTION COSTS

IMPORTANT SAVINGS in the cost of package printing are obtained by the efficient operation and the straight-line production of Champlain Rotogravure and Letterpress printing equipment.

Instant drying gravure inks permit multicolor printing, coating, lacquering and fabricating operations, such as, slitting, scoring, cutting, perforating or punching, to be performed in one continuous operation. This effects economies in handling, in paper and in overall printing time.

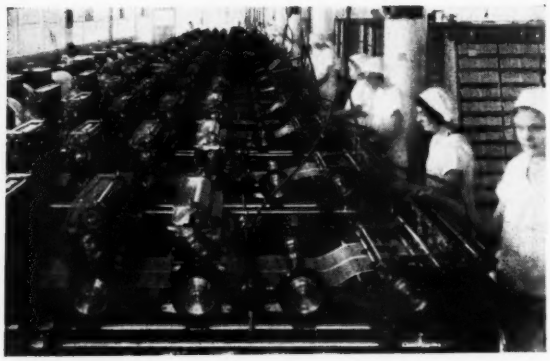
All Champlain Rotogravure Presses have the exclusive Champlain-Speedry fully enclosed ink fountain. This patented feature reduces solvent loss to a minimum and maintains color uniformity throughout an entire run. Solid colors, fine type and tone work may be combined on a single gravure cylinder and printed with equally splendid results.

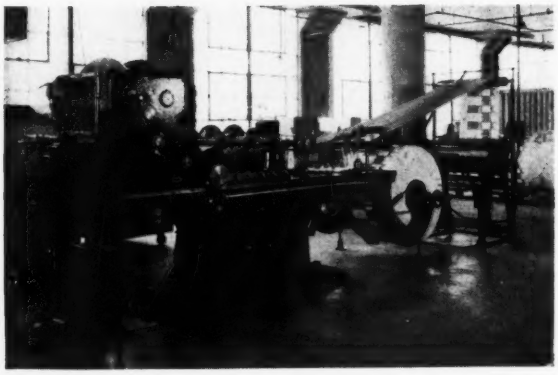
The range from minimum to maximum printing cylinder circumference provides for a wide flexibility in the size of work which can be produced on a single press. Change-overs from one job to another are made quickly and easily as make-ready is completely eliminated. Printing register is accurate and under the instant control of the operator.

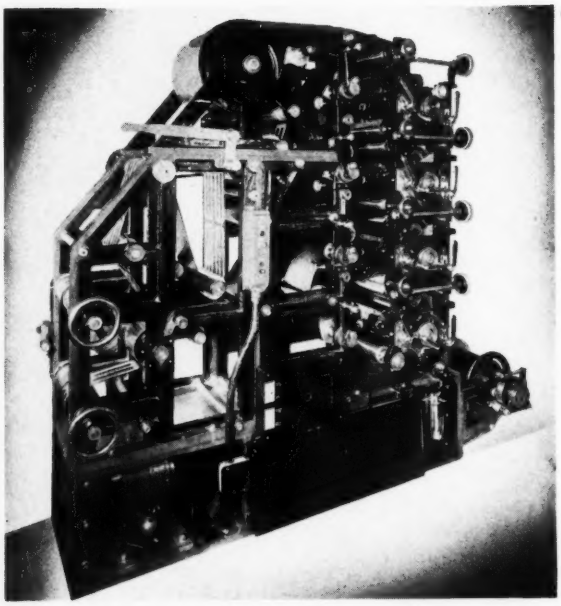
Champlain builds a wide range of presses to cover individual production requirements for printing bags, wraps, labels, cartons, containers, package inserts, brochures, fancy papers, ribbons, etc. Some of the typical jobs produced on Champlain Presses are illustrated.

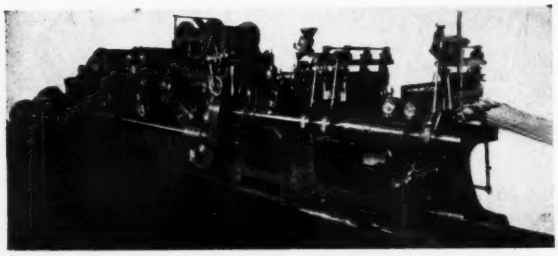
When requesting additional information on Champlain Rotogravure or Letterpress equipment, please furnish samples and production data.

CHAMPLAIN CORPORATION
GARFIELD • NEW JERSEY









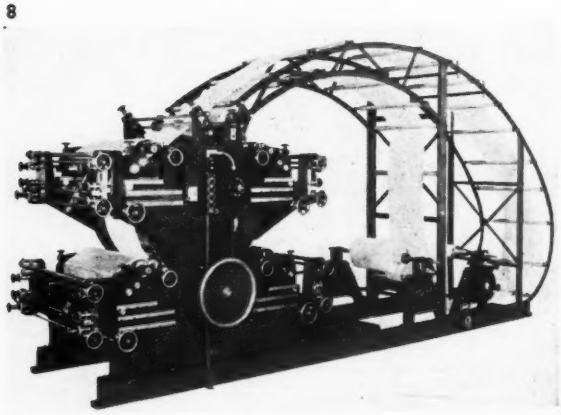
The first classification includes presses such as the Claybourn. This is a multicolor, sheet-fed, rotary press available in two sizes and designed to print in from one to five colors. These presses can be started quickly and operated at high speeds. The manufacturers of this press also offer a five-color web label press which prints from the roll and delivers it in web form.

The second classification includes such presses as the New Era press, Chambon and Champlain letterpress, the Champlain-Weiss Speedry gravure press, the Claybourn web press. The New Era press operates with an intermittent motion; the other types mentioned operate continuously. Paper is furnished to them in rolls and travels through the presses in a straight line. Any type of paper up to 25 point board may be printed successfully, a feature of particular interest to converters. The major feature of the Chambon, Champlain-Weiss and Champlain printing machines, of interest to printers, is their almost unlimited size range and the fact that the same machine can be used to fabricate the printing web and deliver it ready for use in subsequent packaging operations. All printing and fabricating operations are performed by separate units mounted successively on the same base. Machines can be designed to perform such operations as scoring, creasing, embossing, numbering, perforating, slitting and re-winding, sheeting, dieing out to shape, coating, spot varnishing, etc.

A machine of this type, producing a carton once across the web, is a very economical unit where the production runs into millions. Plates sometimes last more than 500,000,000 impressions. Engravings, furnished to order by the manufacturers of the machine, are solid, chrome-plated bronze shells. Curved electros, stereos and even rubber plates are being used on this type of press with success, provided the designs are not complicated. For background or solid colors, a dry offset unit can be substi-

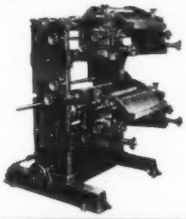
4. Chambon multicolor presses at a food packing plant. **5.** Champlain machine printing and fabricating display trays. Note roll feed device. **6.** Champlain-Weiss four-color press with slitter and spindle re-winder. **7.** New Era web feed printing press. **8.** C. B. Henschel Mfg. Co. aniline press. The unit can print repeats up to 31 in. and has a 34-in. drying space between colors.

8



Aniline Printing

HIGH SPEED HUDSON-SHARP PRESSES FOR EVERY PURPOSE

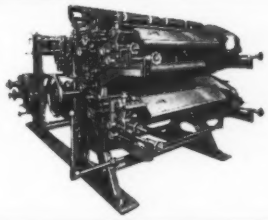


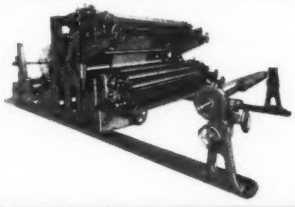
BAG MACHINE PRINTING PRESS . . .

This type of aniline printing press is a popular unit to be run in conjunction with bag machines or used with a rewinder or sheeter for close register production where sheet width is not greater than 40 inches. Machine built with any number of color sections.

ROLL TO ROLL PRESS . . . *FOR GENERAL WORK*

Heavy type press fitted with either center wind, single drum or double drum rewinder. Constructed for label, wrapping paper, decorated wraps or light weight boards. Press fitted with splash proof fountain and three way adjustment for printing roll register.



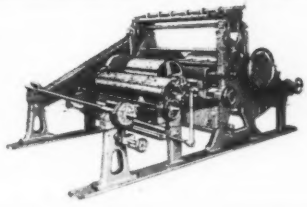


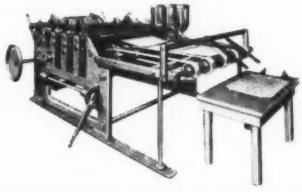
TINTER and OVERPRINTER . . . *FOR LINER BOARDS*

Liner and board tinter and overprinter. Built for either aniline or gravure process. Embosser included in machine where desired. Widths from 50 to 105 inches handled very successfully in this machine. Equipped with a double drum rewinder.

LARGE PRESS.. *FOR USE WITH GARMENT BAG MACHINE*

Specially constructed for work requiring an unusually long repeat. Used in conjunction with garment bag machines and other similar work requiring printing rolls up to a circumference of 72 inches.





SHEET TINTER . . . *FOR CUT AND SCORED BOX BLANKS*

Sheet tinter and overprinter. Will take full sheets or box blanks that have been cut and scored. Any tint from a pastel to deep shades with an overprinted design can be effected in a single operation.

Hundreds of Hudson-Sharp aniline presses used by bag, label, wrapping paper, box and carton manufacturers are giving general satisfaction throughout the United States and foreign countries. Write for complete details and new brochure to-day.

HUDSON-SHARP

MACHINE CO • GREEN BAY • WIS

Builders of machines for converting papers and light boards

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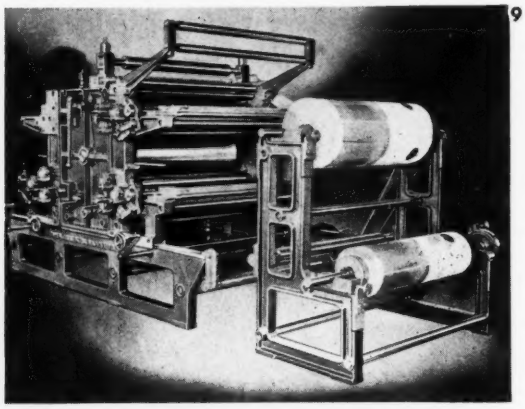
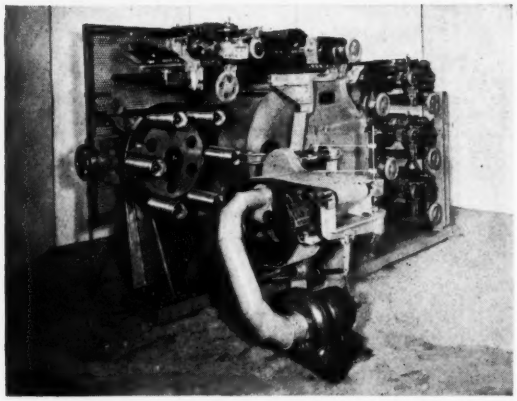
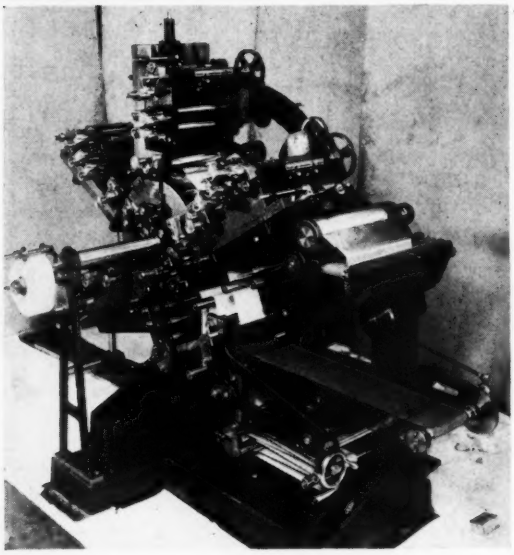






tuted for one of the typographic units, resulting in a better lay of ink and economy in its use. The addition of a Selas burner at one end of the press permits the use of quick-drying Vaporin inks.

The newer gravure presses are capable of delivering a form as large as 36 in. by 42 in. and as small as 2 in. by 5 in. and almost any size between these dimensions. Extremely flexible in operation, they permit the printer to change four colors and change sizes in as little as one or two hours.

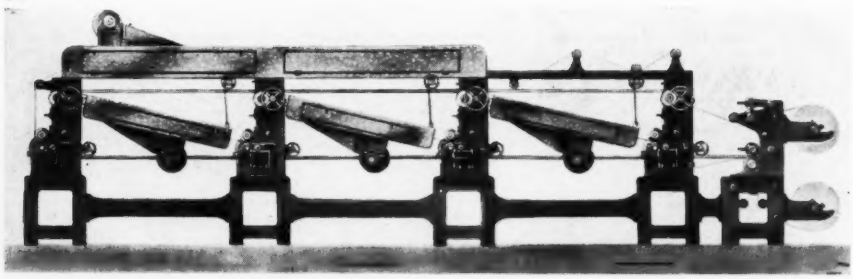
The introduction of these presses has brought to the producer of package printing all the advantages of fine process printing with the economy of high-speed gravure printing. The detail of a 150-line screen engraving can be obtained on rough board; the pressure used virtually plates or irons the board or paper into the engraving so that every detail is obtained as easily as from a coarse line cut in letterpress printing. Major features of these presses are the method of ink application to the gravure printing cylinder and the high ratio of live to dead web.

Chambon and Champlain printing machines may be equipped with a photo-electric register indicating device for the control of longitudinal register of the colors as well as the cutters, punchers and perforators.

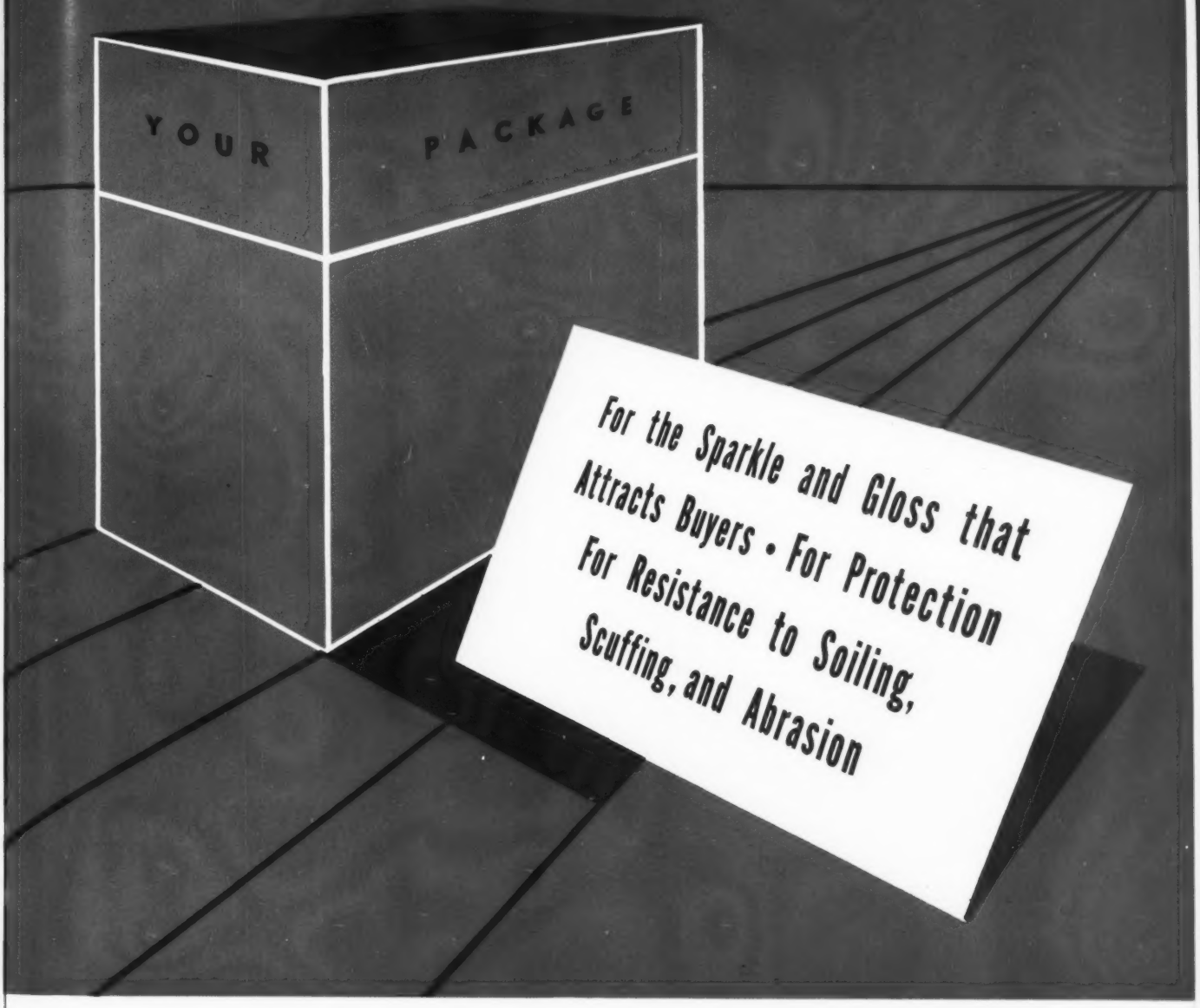
Automatic printing machines such as described are ideally suited for the production of labels, cartons, bags, containers, bread wraps, printed foil, decorative and fancy papers, tea tags, magazine covers, enclosures, etc.

A feature of the Champlain-Weiss equipment is that the printing units can be easily adapted and synchronized to almost any type of packaging equipment. Labels and wraps may be printed and the former applied to the latter all in one operation because the inks dry instantaneously and without odor. They operate automatically and are simple to maintain.

9. Arc type web press for printing one to six colors with rotary register. Made by Paper Converting Machine Co. **10.** Waldron container printer, letterpress offset type. **11.** Meisel multicolor web printing press. Web runs around central cylinder to contact each press in sequence. **12.** This Klingrose multicolor gravure press is designed to handle a wide variety of papers.



NITROCELLULOSE-LACQUERED PACKAGES


YOUR PACKAGE
For the Sparkle and Gloss that Attracts Buyers • For Protection For Resistance to Soiling, Scuffing, and Abrasion

MAIL THE COUPON FOR COMPLETE INFORMATION

Cellulose Products Department

HERCULES POWDER COMPANY
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I am interested in Nitrocellulose Lacquers for use on

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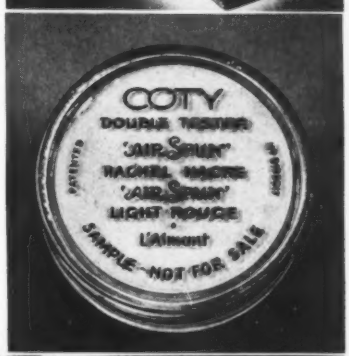
THE PEERLESS ROLL LEAF PROCESS

of Trademarking and Decorating

A PLUS FACTOR IN MODERN PACKAGING



The Peerless Roll Leaf Process is an inexpensive hot stamping process by which gold, silver, or colored foils are stamped into the surfaces of articles made of cloth, paper, plastics, wood, leather, fibre, etc. Consider the Peerless Process if you have a trademarking, decorating, or imprinting problem.

An impression made by our process is clean, bright, and durable. It will not rub off or wear off easily. It will resist the effects of dirt, dust, and moisture. It will provide lifetime identification for your product. The process itself is simple, economical, easily installed, and requires but little space for its operation. All the equipment needed is a Peerless roll leaf stamping press, a steel or brass die (or type), and a roll of Peerless leaf. The stamping and embossing can be done in your own plant or by one of your suppliers.

Inquiries covering specific trademarking or decorating problems are invited. If possible, send samples to be stamped and returned to you. Write to PEERLESS ROLL LEAF COMPANY, INC., 4513 New York Avenue, Union City, N. J. Branch offices located in Boston and Chicago.

A few of the thousands of various products which are being stamped and embossed by the Peerless Roll Leaf Process.

TYPE OF INK	PRINTING PROCESSES IN COMMON USE		MAXIMUM PRESS SPEED REV. PEP. HR. OR FT. PER MIN.		TYPES OF INK IN COMMON USE	
	OLD	NEW	OLD	NEW	OLD	NEW
Metal lithography.	Sheet-fed offset.	Sheet-fed offset. Preformed container printing. Offset gravure.	1500 R.P.H.	3500 R.P.H.	Straight litho varnish vehicle inks.	Natural and synthetic resin vehicles with tung perilla and linseed oils and heat-set inks.
Paper lithography. No coated papers used prior to 15 years ago.	Sheet-fed offset.	Sheet-fed and web-fed offset.	1800 R.P.H.	4500 R.P.H.	Straight litho varnish vehicles.	Natural and synthetic resin with tung, perilla and linseed oils and heat-set inks.
Coated carton and patented coated board.	Sheet-fed letterpress.	Sheet and web-fed letterpress.	1000 R.P.H. sheet-fed.	2600 R.P.H. sheet-fed. 6000 R.P.H. web-fed.	Linseed oil and natural resin vehicle inks.	Natural and synthetic resins with tung, perilla and linseed oils. Aniline and heat-set inks.
Fibreboard and corrugated carton stocks.	Sheet-fed letterpress.	Sheet-fed letterpress.	900 R.P.H.	2400 R.P.H.	Linseed oil and natural resin vehicles.	Natural and synthetic resins with tung, perilla and linseed oil vehicles. Aniline inks.
Label stocks gummed, C.I.S. and gloss.	Sheet and web letterpress. (See offset paper lithographing also.)	Sheet and web letterpress and rotogravure.	1800 R.P.H.	4500 R.P.H. sheet-fed. 900 Ft. per min. rotogravure.	Linseed oil and natural resin vehicles.	Natural and synthetic resins with tung, perilla and linseed oil vehicles. Heat-set inks. Rotogravure.
Functional papers. Moisture - vapor - proof cellophane, glassine, glazed and laminated foil stocks.	Sheet and web letterpress.	Sheet-fed and web-fed letterpress, rotogravure and aniline printing	1000 R.P.H. and only glassine available.	2000 R.P.H. sheet-fed. 1600 feet per min. rotogravure.	Linseed oil and natural resin vehicles.	Natural and synthetic resins with tung, perilla and linseed oil vehicles. Aniline, rotogravure and heat-set ink.

This chart indicates ink developments over a period of 20 years. Note the increase in types of inks commonly utilized today and the introduction of rotogravure and aniline printing. Because of variations in printing conditions, there was no uniform agreement among production men consulted concerning press speeds. The figures given are at the best approximations. In respect to the old speeds, the highest speeds in at all common use have been given in each case.

Printing Inks for Packages

Wholly aside from problems of production and the general demands that printing inks shall faithfully reproduce from the printing element, certain special demands are placed upon inks for use in the packaging field.

One of the most important qualifications for printing inks to be used with food products is that they shall be free from odor. Printing inks have long been characterized by a distinctive odor arising from the vehicle and driers used in their composition. Frequently this odor was so prominent that it would contaminate food products even after long periods of drying and free exposure to the air. Today, through the use of synthetic resin vehicles and through proper handling of inks in all the different stages of manufacture, essentially odorless inks are available.

Since most packages may be subjected to long exposure to light, particularly in the case of window displays, light-fastness has always been an important requirement of package inks. There has been a steady improvement in the light-fastness of colors, so that today almost a complete range of shades with high degree of light-fastness is available.

Most package users have become conscious of the principle that a package should retain its appearance and should continue to deliver its sales message throughout its period of life in the hands of the consumer. This has given rise to serious problems in the case of packages

We are indebted to William F. Talbot of the General Printing Ink Corp. and to David Donovan of the International Printing Ink Division of the Interchemical Corp. for aid in the preparation of this article.

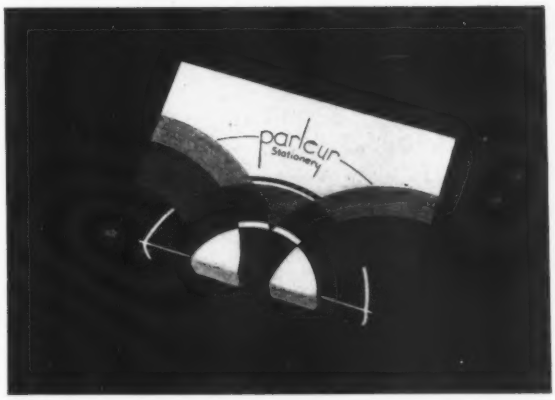
Cross References: Color and Reproduction Methods, page 16; Can Decoration Processes, page 240; Printed and Lithographed Labels, page 300; Lithographed and Printed Window Displays, page 351; Decorated Sheet Metal Displays, page 359; Package Printing Machinery, page 490; Surface Coatings, page 502; Coating, Laminating and Embossing Equipment, page 508.

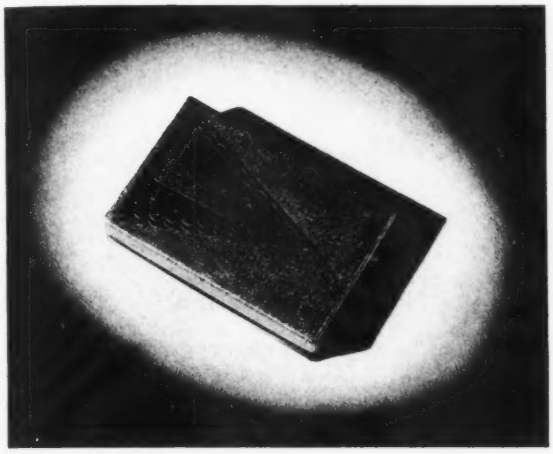
SOLVED by PLASTIC RELIEF PRINTING

My Product Demands Distinction

Beauty, distinction and an air of quality were called for in this writing paper box. A top-flight designer was called in and so was VIRKOTYPE PLASTIC RELIEF PRINTING.

(Among users: Mid-West Paper & Envelope Co.; Western Tablet & Stationery Co.)





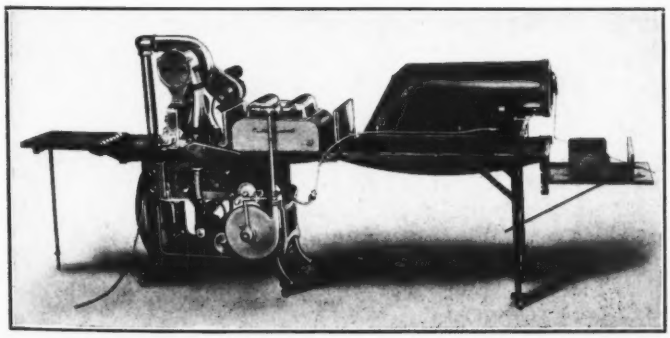
My Package Must "Take It"

New distinction was the problem in this playing card box. Relief printing was suggested for the improved design. "Wouldn't it crack, peel, chip in hard, long use?" Not VIRKOTYPE PLASTIC RELIEF PRINTING—it's tough and scratch-proof.

(Ill.: Package designed by U. S. Playing Card Co.)

I Need Low Cost Per Unit

"Extra beauty and distinction—something really new at scarcely anything extra per unit." VIRKOTYPE PLASTIC RELIEF PRINTING solves this problem for such prominent firms as: Diamond Match Co., Ohio Match Co., Universal Match Co.



DOMORE
Automatic Processing Machine

Tell us about your package printing problem. If you'll furnish your regular plates, we will be happy to show you *proofs* of how VIRKOTYPE PLASTIC RELIEF PRINTING adds extra distinction to your package at hardly anything extra per unit . . . . because it gives quality plastic relief printing at full press speeds.

Send For Complete Information

WOOD, NATHAN & VIRKUS CO., INC.
112 Charlton Street **New York, N. Y.**

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whose contents might be deleterious to ink when accidentally coming in contact with it. This situation applies to many toilet articles containing alcohol, water and essential oils which tend to damage labels and other printed matter. It applies also to such commodities as soap powders which are used from the package. It also applies, to some extent, to packages which may be contaminated with the contents during the packaging operation. This kind of requirement is handled by the development of non-bleeding inks, alcohol-proof inks, alkali-proof inks, etc.

Functional Use of Paper

The introduction of special paper lacquers and hot melt coatings, possessing a high degree of resistance to moisture-vapor transmission as well as resistance to creasing and folding plus advantages of heat-sealing, opened a whole new field of packaging endeavor. Closely related to this development was the use of metal foils laminated to paper which had long been known, but whose functional use had not been widely appreciated. Of course, the transparent sheet materials are not to be overlooked, since their introduction gave impetus to functional uses of sheet wrapping materials.

All of these developments introduced new ink problems of varying degrees of complexity. In many cases, inks, which have long been known, function satisfactorily when lacquers or hot melt coatings are applied for protection purposes. In other cases, however, inks of special properties were required in order to secure satisfactory adhesion and to avoid the problems of bleeding and damage to the printed surface during the subsequent operations. From an ink standpoint, the latest development in this field is the introduction of inks which, in themselves, have protective properties, particularly in respect to moisture-vapor transmission, and which therefore take a portion of the load formerly borne entirely by the protective coating.

Many packages carry practically allover printed designs. While ordinary inks do improve the surface of paper for lacquer reception, they contribute little or nothing to moisture-vapor-proofness. Recently, inks have been developed, particularly for rotogravure application, based on moisture-proof formulations. While printing with these inks will not in itself contribute a sufficient degree of protection for most uses, they do add to the protection gained through the use of lacquers.

Cartons

Carton printing, only a relatively short time ago, resulted

Much of the advancement in ink, within the last 20 years, has been in the nature of unspectacular, stepwise improvements. There are, on the other hand, a few cases where ink contributions have been outstanding.

TYPE OF INK	TIME REQUIRED FOR COMPLETE DRYING OF IMPRESSIONS		LAPSE OF TIME REQUIRED BEFORE FINAL PROCESSING		ADHESION AND SCUFF RESISTANCE		FINISH	
	OLD	NEW	OLD	NEW	OLD	NEW	OLD	NEW
Metal lithography.	20–30 min. bake at 250° F.	3 to 10 min. bake at 240° F. to 320° F. for synthetics. Almost instantaneous for heat-set type.	7 to 14 days.	1 to 12 hours.	Barely adequate.	Excellent.	Poor.	Excellent.
Paper lithography. No coated papers used prior to 15 years ago.	12 to 24 hours. Coated paper racked out between impressions.	3 to 8 hours for synthetic and ordinary inks. Instantaneous for heat-set types.	24 to 72 hours.	24 hours.	Fair.	Good although need remains for improvement in scratch and rub resistance.	Poor.	Good.
Coated carton and patent coated board.	8 to 24 hours.	Instantaneous for heat-set and aniline inks. 6 to 10 hours for synthetics.	24 to 72 hours.	Instantly for aniline and heat-set to 12 hours for synthetics.	Fair.	Good although need remains for further improvement in scratch and rub resistance.	Poor.	Excellent.
Fibreboard and corrugated carton stocks.	8 to 24 hours.	Instantaneous for aniline inks. 6 to 12 hours for more ordinary ones.	24 to 72 hours.	Instantly for aniline. 6 to 12 hours for synthetics.	Fair.	Good although further improvement is needed.	Fair.	Excellent.
Label stocks gummed, C.I.S. and gloss.	8 to 24 hours.	Almost instantaneous for heat-set and rotogravure 6 to 12 hours for synthetics.	12 to 72 hours.	Instant to 24 hours.	Fair.	Good although further improvement is needed.	Fair.	Excellent.
Functional papers. Moisture - vapor - proof cellophane, glassine, glazed and laminated foil stocks.	12 to 24 hours.	Instantaneous for heat-set aniline and rotogravure. 6 to 12 hours others.	12 to 36 hours.	Instantaneous to 12 hours.	Fair.	Good although improvement is needed.	Fair.	Excellent.

When the job is *Tough* LEVEY inks show their greater value!

"GIVE us striking color with high gloss", demands the packaging industry, and Levey responds with inks which fill the bill completely. Here to the right is one example of results obtained when Levey's modern, high-gloss Flashdri inks are used.

This famous bag decoration was reproduced from original plates on a rotary web press with the same inks used in the original printing. Note the striking color, its cleanness and brightness. Observe also the gloss which practically gives the effect of a varnished job.

Because Levey Flashdri inks give what the packaging industry wants, discerning printers by adopting them, have solved some of their major problems. Levey Flashdri inks now are employed to print a long line of the better-known bags, packages, containers and labels —untold millions of them.

Perhaps you have some difficulty which Levey Flashdri inks can remedy. Our technical staff will be pleased to advise you.

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LEVEY Inks

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Flashdri INKS by LEVEY

- dry almost instantly when brought into contact with proper heat.
- do not offset, slur or smear, and therefore eliminate the need for traveling tympan or blotting rolls, wax and other types of spray.
- are formulated for use in rotary web printing.
- appear more brilliant and have more gloss than corresponding shades of oil inks.
- may be produced in any shade of color, including metallic inks.
- are adaptable to every type of paper stock.
- are odorless when dry and therefore should appeal to food packers and tobacco manufacturers.
- make possible the combining of other operations with the printing press, such as bag, box and carton making, and waxing.
- make possible greatly increased printing speed (at the present time the limit of speed has not been reached.)
- cost within practical limits for economical use.
- permit better matching of engravers' proofs since dry prints are delivered from the press, thereby eliminating guessing as to how the finished print will appear.

WE will gladly send complete details regarding Flashdri inks and the Flashdri process to printers and their technical assistants upon request.

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LEVEY Inks

JOHN WALDRON CORPORATION

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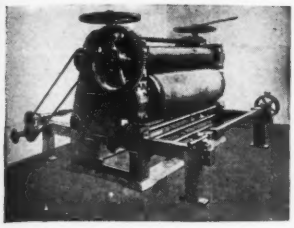

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Waldron Embossing Machines are built in a wide range of types for producing desired effects on any material with roll embossers. Each machine rigidly built and correctly designed and proportioned with respect to the important factors of speed, pressure, and tension for particular requirements.

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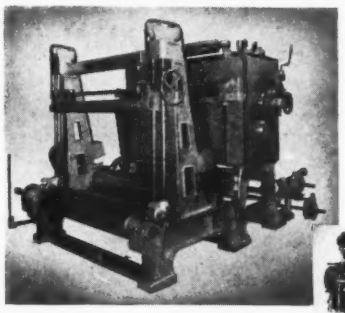
OVER A CENTURY OF EXPERIENCE BUILDING PAPER CONVERTING MACHINES
SINCE-1827

Manufacturers of Machines for

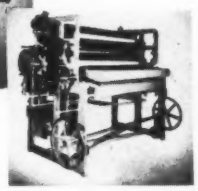
EMBOSSING—PRINTING—COATING
WAXING—LAMINATING—LACQUERING
SLITTING—REWINDING—DRYING

HOT MELT COATING
AUTOMATIC GUIDERS
SCREEN PRINTING



Left: Waldron Hot Melt Coating Machine.

Below: Hot Melt Inking Distribution for printing.



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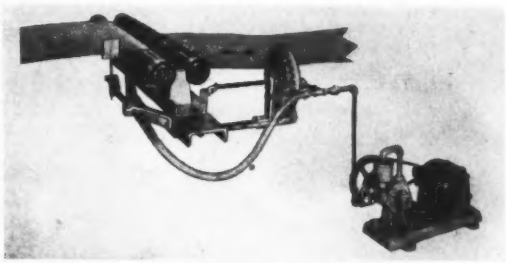
This new line of equipment designed particularly for coating and printing the new synthetic compounds at elevated temperatures, eliminates the necessity of solvents in coatings and inks. No drying apparatus, wax sprays or slip sheets are necessary. For printing operations it is quite possible we may convert your present presses at moderate cost. Why not consult us?

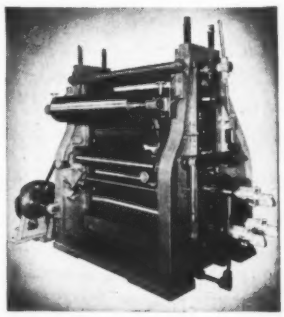


Waldron Automatic Web Control. The Waldron-Dickhaut Automatic Web Guide for guiding paper in processing insures more uniform finish and bundle—cutting down waste.

Waldron Lacquer Coater

Waldron Coating Machines are available in knife, combination roll and knife, roll coaters, reverse roll brush type and Bracewell Centrifugal Contour covering the entire range of coating requirements. Regardless of the kind of coating material used—thin staining material for tints, waterproof material, varnish, lacquer, or clay—a Waldron machine can be depended upon to apply it faster, smoother, and better.

The Waldron Reverse Roll Coater is specially designed for the application of quick drying lacquers or varnishes.



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in a package which, when compared with a tight-wrap package where better stocks were used, left a good deal to be desired. Aside from improvements in carton stocks, there have been recent changes in carton inks with decided advantages to carton printing. Carton inks have been improved in their working properties on the press and in smoothness of lay. In line with the current demand for gloss merchandise, inks have been developed which give relatively good gloss even on more inexpensive stock grades.

One of the more important improvements in the shelf appearance of printed cartons has come from the development of scuff-proof inks. Due to severe abrasion in shipping and handling, it was not unusual for inks to be smeared and even completely removed in some areas. By judicious use of the newer synthetic resins and other changes in formulation, scuffing has been minimized.

From a production standpoint, another new development is beginning to be felt. This development is centered around the use in carton printing of the heat-dry inks, originally introduced for publication purposes. The use of the heat-dry principle very markedly increases the speed of drying and is particularly advantageous in operations where the printed stock is to be submitted to a forming operation after printing. In some cases, forming is now being carried out immediately after the printing operation without any waiting period for ink to dry.

Closely related to carton printing is the growing use of printing on corrugated stocks and other relatively inexpensive packaging materials. Because of the rough absorptive nature of these stocks, printing was formerly done only for informative purposes. However, inks are now available with sufficiently good printing properties for these inexpensive stocks to permit decoration and many interesting and well-designed packages are being used. Here, again, improvement has come chiefly through the use of synthetic resins to formulate vehicles which will lie on the surface of rough, inexpensive, absorptive stocks, rather than sinking into the stock.

Foil Wraps and Cartons

Extensive use of foil-laminated paper for protective and decorative purposes has introduced new printing problems. When foil is used in limited quantities, the old slow methods of typographic printing are satisfactory. In fact, in the older uses of foil (such as in the gum and cigarette trades), the printed message has been carried on paper outside wrappers. The development of printing techniques, which would allow high-speed production of printed foil wrappers, has revolved largely around the rotogravure process.

In developing inks for this process, the ink maker has drawn heavily on synthetic coating materials and inks of excellent printing properties, high brilliance, firm adhesion to the metal surface and with excellent speed of drying have been developed. Vehicles for inks of this type consist mainly of solutions of gums, synthetic resins cellulose esters and plasticizers in organic solvents. A very nice balance between the various solid ingredients and careful control of the solvent power and evaporation rates of the solvents is required for satisfactory work.

The most desirable techniques for printing the transparent sheet materials have been very similar to those applied to foil, although, here, one cannot overlook aniline printing which offers certain advantages in high-speed production on non-absorptive surfaces.

Metal Lithography

The functional merits of the metal container, with its perfect resistance to the deleterious effects of light and air, its high resistance to mechanical shock and its tamper- and substitution-proof qualities, have long been recognized. It has only been recently, however, that the smooth, unbroken surfaces of metal containers have taken their proper place from a decorative standpoint. It is true that metal lithographing has long been practiced. Tobacco and talcum powder tins have been lithographed for years. In spite of this, the range of colors and decorative effects have been comparatively limited. Recently there has been a host of newcomers, using lithographic metal containers under widely varying conditions and with a practically unlimited range of colors.

There were serious difficulties and limitations in the old metal lithographing process. The vehicles of the inks formerly used were composed chiefly of bodied vegetable oils. They were by no means satisfactory in respect to adhesion. The forming operations carried out after lithographing the flat metal frequently scratched, cracked and even completely removed the ink from some areas. The long period of baking at high temperatures, necessary to bring about the ultimate drying of the ink, caused marked changes in many pigments, thus limiting the designer's palette. Few, if any, of the old inks were satisfactory for food containers where the contents were subjected to the heat and moisture of sterilization after filling and closing.

Within the last few years, however, metal lithographing inks have undergone an almost revolutionary change. To a very large measure, the difficulties listed above have been overcome and, at the same time, the inks have been improved in smoothness, gloss and general appearance. This revolutionary change has been based almost entirely upon the substitution of synthetic resins for the oil vehicles of a few years ago. At the same time, the gradual but extensive expansion of the color industry to include many pigments in shades previously unsuited for lithography has increased the range of available colors.

A rather wide variety of resins may be used in metal lithographing inks, depending on the use of the material and the kind of equipment employed. In general, soft oil-modified resins are used without solvent and hardening occurs during the baking procedure. This is in contrast with the heat-dry inks whose vehicles consist mainly of solutions of hard resins in organic solvents and which dry by evaporation of the solvent.

From a production standpoint, these new inks have effected advantages in ease of manipulation on the press, reduction in the drying time and improvement in the ease of handling of the finished lithographed sheets because of rapid and thorough drying.

HERE ARE 22 AWARD-WINNING PACKAGES

Every One of Them Is Printed with IPI Inks

IN 1940, as in years past, IPI has furnished inks for more All-America and Wolf Award winners than has any other ink manufacturer. In the 1940 competitions, 22 of the prize-winning packages were printed with IPI products.

Why do so many leading packagers and package printers depend on IPI for their inks? They know that through constant research into packaging and display ink problems, IPI has earned a reputation for leadership.

The results of this research are developments like Vaporin, the instant-drying ink for high-speed production. New offset colors, with greater brilliance and finer lithographing qualities. New halftone blacks that reproduce with sharper detail. Pigmented aniline inks, with fastness to light and to water bleed, and the new Anilox method of printing with aniline presses. Glo-Ray inks, for more beautiful gloss printing.

If you are a packager, you can get the benefits of IPI's comprehensive research program by specifying IPI inks. Ink represents a small percentage of the total cost in producing a container. Why not be *sure* of the inks you use? Write us for information on new inks for container printing. International Printing Ink Division of Interchemical Corporation, Dept. PC41, 75 Varick Street, New York City.

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Surface Coatings

A number of materials are at present coming into increasingly wider use as surface coatings for paper labels, wraps, cartons, etc. These fall into two general groupings known to the layman as lacquers and varnishes. Within each group, however, there are a number of types of material available and new materials, such as rubber derivatives, are hard to classify under either grouping.

The original function for which these materials were developed and applied to packaging was to provide a high gloss finish which would insure greater eye appeal for the package. While this is still an extremely important function in many instances, a number of other functions are met by this group of materials. These include the following:

1. Resistance to dirt and to oil and grease stains, fingerprints, etc.
2. Moisture resistance. Lacquers in particular can be so formulated as to seal paper and hard surface cardboard against the penetration of moisture from without or against evaporation from within.
3. Scuff-proofness. Both lacquers and varnishes provide varying degrees of resistance to chafing, scratching and scuffing and hence preserve the original appearance during transit.
4. Bleed resistance. Spirit label varnishes and lacquers prevent moisture derived from the outside or from the interior of the package from causing bleeding of printing or lithography.
5. Alkali resistance. Lacquers in particular are unaffected by mild alkalies and therefore find special application in the packaging of some alkali products. This quality also permits wiping or washing of lacquered packages.

Formulation of Surface Coatings

While a certain degree of standardization in such coatings has taken place, practically all types of lacquers and varnishes should be formulated by the supplier only after a careful study of all of the factors entering into the application and use of the material. Suppliers are prepared to render a great technical aid in this respect and to advise not only on the proper formulation of the lacquer or varnish, but also on the selection of papers, applications, processes, inks, etc.

Spirit Varnishes

Spirit label varnishes are alcohol solutions, usually of manila gum, which dry by the evaporation of the solvent. Other materials are sometimes added. Although basically simple, their exact formulation, processing and application have considerable bearing upon the quality of the coating obtained, its transparency and the amount of gloss. They are applied by running the printed sheets through a varnishing machine where the varnish is rolled over the sheet and dried quickly by passing through an oven. They then continue on a belt for an additional cooling distance before stacking.

Spirit varnish gives a clean, smooth finish over most grades of paper. Under ideal conditions, it is the most brilliant finish available. Care should be taken, particularly during the drying process, to avoid oxidation factors resulting in the presence of objectionable odors. Care must be exercised not to use inks soluble in alcohol on sheets which are to be spirit varnished.

Overprint Varnishes

Overprint varnishes are coming into wider use in the packaging fields. A major advantage they possess is that they may be run on either lithographic presses or letterpress equipment. They are clear and transparent, giving an excellent gloss effect over dry ink. Any design required may be printed with varnish so that the paste flaps may be left free of both ink and varnish, a very important advantage for folding boxes and wraps.

Overprint varnish gives a tough, slippery film, a high gloss which is resistant to chafing and scratching and to most other destructive agents. Consisting of an oil base plus resins, wax and driers, it dries through oxidation and hence requires a considerably longer drying time than spirit varnishes.

Lacquers

Lacquer, made of cellulose compounds and suitable solvents, is usually applied in much the same manner as spirit varnish. In some cases, it is sprayed rather than rolled on. It dries by evaporation of the solvents.

Lacquering is usually a more expensive process than varnishing, both because of the deposited lacquer and because a heavier film is usually applied. While such broad differences in cost would seem to rule out lacquers for most purposes, this is not, in actual practice, the case. The provision of such qualities as moisture resistance, alkali resistance and grease resistance and the higher resistance which lacquers provide to scratching, chafing and rough treatment frequently makes their use desirable and in a number of instances has permitted of economies on other portions of the package more than compensating for the actual cost of the lacquers.

Thus in some instances, companies formerly utilizing friction-sealed metal cans to keep products dry have found it possible to use less expensive paper walled canisters in conjunction with lacquer coated labels.

Cross References: Resin Treated Papers, page 201 and Coating, Laminating and Embossing Equipment, page 508.

We are indebted to A. K. Doolittle and J. R. Price of the Plastics Division, Carbide & Carbon Chemicals Corp. for aid in the preparation of the section of this article concerned with vinyl resins.

MEISEL PRESSES

ROTARY BED & PLATEN

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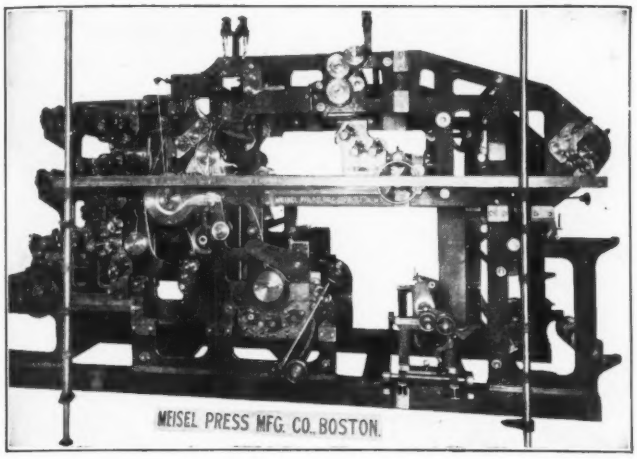
OFFSET TYPOGRAPHIC GRAVURE



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The sturdy construction and mechanisms embodied in Meisel machinery commend them to your attention for saving in production.

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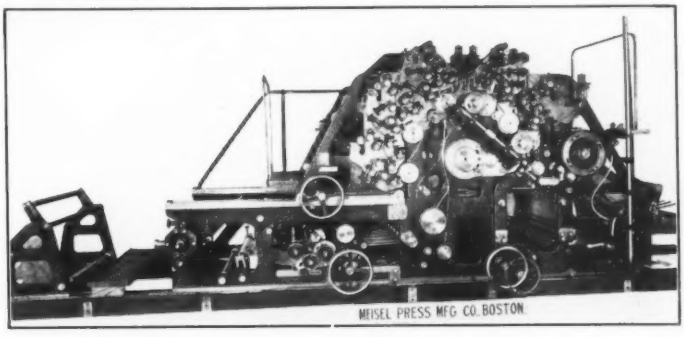

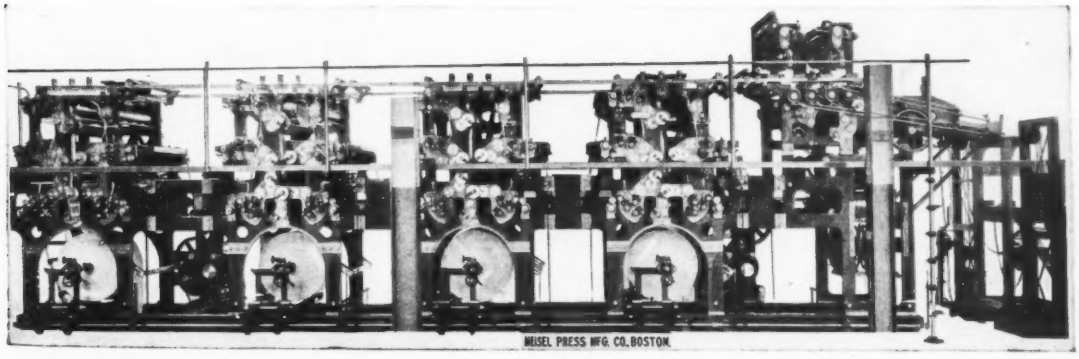

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Lacquers, above all other coated compounds, require the most careful formulation and the most thorough knowledge of conditions to be met in production, processing and use if they are to provide desired qualities.

Lacquer coatings are clearer and brighter and do not discolor white areas as compared with varnishes. Their discoloration with age is very much less than that experienced with varnishes.

Rubber Derivative Coatings

In the last two or three years, coatings based upon rubber derivatives have achieved increasing usage because of their moisture-vapor-proof qualities.

Two types of such coatings are available—one, applied as a solution by a standard coating procedure, provides a highly moistureproof, strongly heat-sealing transparent and glossy coating. The other, compounded with wax and applied as a hot melt coating, is utilized where transparency is not a major factor and where some degree of gloss and heat-seal strength can be sacrificed.

Vinyl Resins

Vinyl resins have found a place in the food and beverage packaging field, due to the unique properties which they possess that especially adapt them for food package use. These properties include moisture, grease and alcohol resistance; thermoplasticity; non-inflammability; and absence of taste, color or odor.

Co-polymer vinyl resin is the term used to describe the vinyl resins manufactured by the co-polymerization of vinyl chloride and vinyl acetate. Co-polymer vinyl is a hard, tough, colorless and transparent resin and is soluble in several classes of organic solvents.

Two general methods of applications are in commercial use for coating paper with co-polymer vinyl, namely, solution coating and calender coating. For coating metal, however, the solution coating method is the only practical means so far devised. There are several ways in which the solution coating of paper or of metal may be carried out. For instance, the sheet may be knife coated from a viscous solution; it may be roll coated by either the "wet roll" method or by the "offset roll" method; or, finally, the sheet, or preferably the fabricated container, may be sprayed with, or dipped in, a vinyl lacquer.

In all cases where the vinyl film is deposited from solution, it is necessary to "force dry" or bake the coated stock in order to rid the film of the last trace of the solvents. Co-polymer vinyl is not a heat-hardening resin. Vinyl lacquers dry in the same manner and by the same means as pyroxylin lacquers, but the tendency of the resin to retain residual solvent is greater than is the case with nitrocellulose.

The calender coating of paper is accomplished by working the plastic mass into a thin film over heated rolls, then calendering this film continuously onto paper which is fed through the machine at the same rate as the film is formed. Film thicknesses as low as two mils are readily prepared by the calendering method just described.

The lining of tin cans for packaging beer was never successfully accomplished until vinyl resin became available. At the present time, this field represents a major outlet for co-polymer vinyl resins. Aluminum foil, such as is used for cheese wrappers, is protected by a thin clear coating of co-polymer vinyl, while numerous articles fabricated from foil, such as catsup caps and liquor bottle closures, owe their exceptional resistance to the film of vinyl resin deposited on the surface.

Vinyl calender coated paper is widely used as liner material in closures for many food products, such as pickles, mayonnaise, cordials and beverages. The larger field of wrapping paper for perishable foods is just now awakening to the advantages of vinyl coated paper, but for these outlets solution coating seems to have some merit in preference to calender coating, since it is possible to apply a thinner film by the former method.

The thermoplastic nature of co-polymer vinyl is often utilized in the packaging field, where heat-sealing is desirable. Two sheets of paper, for example, will be permanently bonded together if a thin film of vinyl is laid between them and the sheets lightly pressed for an instant between platens maintained at approximately 300 deg. F. Of course, this film could be a surface coating deposited from solution on one of the sheets.

The bonding action made possible by heat and pressure is not restricted to sealing two sheets of paper. A very large commercial application in the food packaging field, for example, makes use of the heat-sealing feature of vinyl to bond adjoining folds into a strong container.

A very interesting application of vinyl to paper that is indirectly related to the food packaging field is the production of coated labels that are resistant to water, alcohol, alkali, oil and grease. Such labels are usually solution coated by the roll coating process and some very beautiful work is at present being offered commercially.

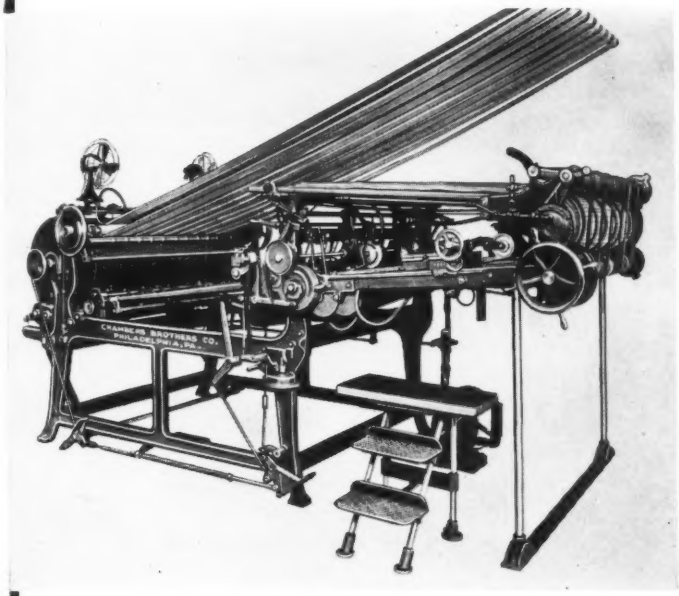
Vinyl emulsions are useful in the application of coatings on the surface of porous materials with a minimum consumption of resin per unit of surface covered. This is possible because the water strikes into the porous surface first and thus prevents penetration of the lacquer phase. The lacquer droplets therefore coalesce on the surface to form a continuous protecting film, while the water evaporates from the other side of the surface. This method of applying a surface coating appears particularly promising when used in conjunction with pulp containers such as cake boxes, milk cartons, etc.

Another feature peculiar to emulsions is the ease with which high solids can be reached at low viscosity. An emulsion is a suspension of finely divided droplets of lacquer in water. Thus, the viscosity of the emulsion is not determined by the viscosity of the lacquer itself, but is dependent on such things as proportion of water or continuous phase, size of the lacquer droplets, nature of the emulsifying agent, etc. Thus a very concentrated lacquer phase may be emulsified with water in the proportion of approximately 75 parts of lacquer to 25 parts of water and yet produce an emulsion of low viscosity. A very slight additional thinning with water will reduce the viscosity to nearly that of water itself.

New High Speed Ball Bearing Varnisher

with Automatic PAPER FEEDER

WITH the King continuous feeder the outfit can be changed from automatic to hand feeding within fifteen minutes. During shop tests this combination has been operated at upwards of sixty sheets per minute. The delivery is by cotton bands to a position adjacent the entrance to the drying oven. This new combination has much merit even for lower speeds than mentioned.



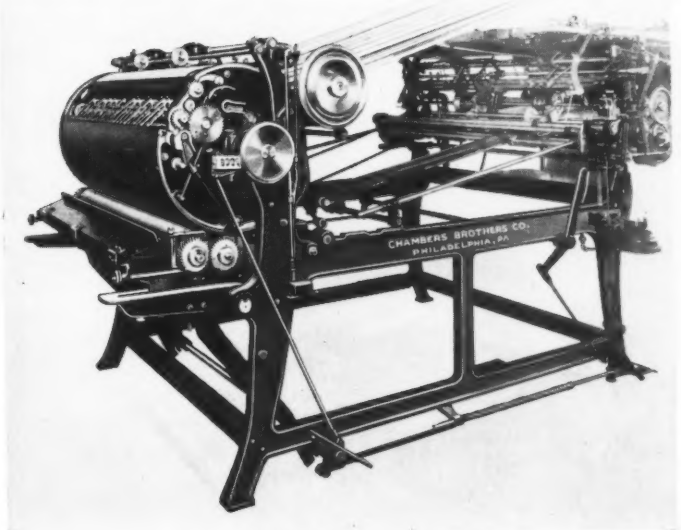
This Feeding Machine

has been re-designed and new features added to meet the requirements for Varnishers. It has automatic trips and a very efficient brake. The bank feed is under caliper control. When properly adjusted to suit the paper conditions this feed is wholly automatic and requires no further attention. The machine is provided with a sideways registration usable from either edge of the sheet. Any grade of paper suitable for varnish work can be fed. We guarantee it without reservation.

The Cylinder Mechanism

of this new Varnisher is wholly **new**. Quiet, smooth-working, it functions at high speed. In addition there is now built into this machine as standard equipment certain features formerly regarded as optional. These improvements have been developed from time to time in connection with our Standard Model and have proven their value. Our Standard Model is described in Revised Bulletin No. 1414.

The main cylinder and all tumbler mechanisms have sturdy ball bearings. The applicator roller and ductor roller journals are ball and roller bearings.



The gear cover at end of cylinder and the usual feed tables were removed when this photograph was taken.

CHAMBERS BROTHERS COMPANY **PHILADELPHIA, PA.**

Roll Leaf Stamping and Embossing

Roll leaf stamping and embossing is a process by which gold or colored foil is transferred onto and into the surface of paper, wood, plastics, leather, etc., for decorative and identification purposes. The roll leaf process lends itself particularly well to the decoration of high grade paper and fabric covered box tops, plastic containers, tool handles and all articles which are improved by decorating or trade marking.

This process utilizes a hot stamping press, a heated steel or brass die (or type) and a roll of stamping foil. The article to be stamped is placed under the head of a stamping press containing a heated brass die. A roll of stamping foil is carried across the face of the die. With each operation of the press the die is impressed into the surface of the material being stamped. At the same time the impression is made the pigment is transferred from the stamping foil carrier to the material. The impression and the transfer of the pigment are done in the same operation. The operation is really an embossing and imprinting operation in one.

In the case of box tops and box wraps which are embossed by the roll leaf method, the embossing operation is performed after all the printing has been done. The work is usually done on a platen press of the Thomson-National, Chandler & Price or Brantjen and Kluge type, which is equipped with a roll leaf feeding attachment and a heating plate. A brass die is made for the part of the design to be embossed in roll leaf. This die is a combination stamping and embossing die, designed so that it not only causes the foil to release, but also embosses the surface to which it is applied, all in one press operation. The roll of gold bronze or colored foil passes across the face of this heated brass die. With each operation of the press, the foil is transferred from the paper web to the box wrap surface.

Acknowledgment is made to Alfred A. Morse for aid in the preparation of this article.

The roll leaf process is unique in that it eliminates entirely the operations of sizing and bronzing. In one operation, it applies the foil and embosses the design into the surface of the paper.

The marking or decorating of plastic articles offers still another problem, because of the nature of the material being stamped. Special presses have been developed for this purpose and the use of steel dies and high pressures allows the stamping of very hard materials with satisfactory results. This roll leaf process has also been applied for stamping plastic closures.

One of the largest fields of application of the roll leaf process is in the stamping of articles made of wood. Tool handles, for instance, lend themselves admirably to this process.

The wide range of colors available makes it possible to use almost any color combination. There are pigment and metallic colors as well as gold and silver. The cost of the stamping foil is rather low, approximately one cent for 30 to 40 sq. in., which makes it easy to estimate the cost of material for a particular job. The stamping foil is available in any width up to 24 in. and is supplied in rolls 200 ft. long. Steel or brass dies are relatively inexpensive and good for many hundreds of thousands of impressions.

In the operation of the various stamping presses, there are several outstanding advantages. The operation of the press does not require any particular skill on the part of the operator. Automatic feeds can be arranged which bring the article to the press and eject the finished and stamped article as desired. There is no drying time required and the finished articles can be packed for shipment immediately after they leave the press.

Cross References: Package Printing Machinery, page 490 and Coating, Laminating and Embossing Equipment ,page 508.

Left to right: Roll leaf stamping as used on bottle label, set-up box and molded transparent acetate powder container. Photos courtesy Peerless Roll Leaf Co., Inc.

POPE & GRAY, Inc.

95 MORTON STREET ● **NEW YORK CITY**

Manufacturers of a full line of printing and lithographic inks.

* **Hi-Gloss Overprint Varnish** is used and recognized as standard for varnishing labels, wrappers and folding boxes.

* **Metlak Silver Ink** for both litho and letterpress is supplied ready to run and is notable for its brilliance and opacity as well as its smooth working qualities.

* **Metlak Overprints,** in conjunction with Metlak Silver Ink, provide the best method for imitating bronze work on letterpresses and offset presses.

* **Hi-Gloss One Impression Inks** for letterpress or litho offset press give you a varnished effect with single impression.

●

*REG. U.S. PAT. OFFICE

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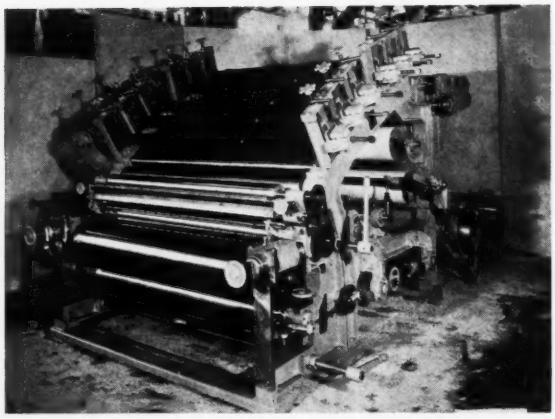
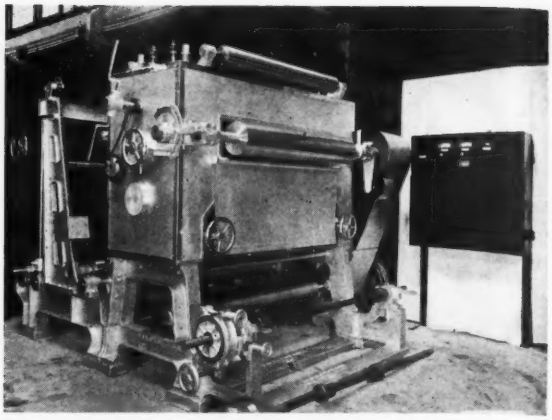


1. Combination roll and brush coater for clay coatings. Photos courtesy John Waldron Corp.



2. Hot melt coater used for the application of lacquers or resins that have a solid nature.

Coating, Laminating and Embossing Equipment

The four horsemen of converting are coating, laminating, printing and embossing operations. They are the main factors. In the manufacture of labels, wraps, covers, catalogs, inserts, containers and boxes, they play an important part.

Coating

There are two types of coating—one is protective and the other is decorative. The protective type includes coating of paper to protect its surface and the coating of paper to protect its contents where it is used as a wrapper.

Decorative includes coating paper where it is used for printing or where it depends upon a high gloss to give it a special finish.

There are various types of coating machines, such as brush, roll, knife and spray, and each of them have their own advantages. The type of coating that is used will determine the kind of coating machine that will best apply the coating, i.e., the coating may be of either low or high viscosity and it may have a high or low surface tension. Coatings that have a tendency to brush mark can be applied more readily on a roll or knife coater. Some coatings have a tendency to rib. In this case, they can be handled on a roll coater, for ribbing generally means that the coating has a high surface tension. Such coatings are better run in high viscosities on a knife coater. A spray coater can be used to advantage on rough surfaces, but its weakness is that it is wasteful and has a tendency to dry the coating during the spraying operation, leaving an orange peel effect.

Clay coating is still used to produce the best printed effects, for it has been found that minerals present a fine surface for printing inks.

We are indebted to Frank W. Egan of the John Waldron Corp. for generous aid in the preparation of this article.

For the application of lacquer, a roll or knife coater is used. The roll coater will apply a coating that can be applied on a brush coater, that is, a coating having the same viscosity, but the knife coater will apply lacquers having a solid content of 70 to 80 per cent. This proves a great saving in solvent and reduces the fire hazard to a minimum. Both clear and metallic, as well as pigmented lacquers, can be applied on the knife coater, but the knife coater has to be of a special type. It cannot be of the old fashioned arrangement, where no blanket and no specially ground doctor with controls is utilized.

The popularity of lacquer coated papers has created a demand for a lacquer that is solventless and does not prove a fire hazard. Such a lacquer has been produced. The lacquer comes in a solid form and has a melting point of around 180 deg. and is best applied at a temperature of around 300 deg. With these melting and applying temperatures, blocking is eliminated and you can apply the lacquer to the paper surface at a speed of from 200 to 300 ft. per minute. The machine for applying this lacquer, necessarily, must be a precision machine, for one ten thousandth of an inch setting on the application rolls applies a pound of lacquer to a ream of 25 by 38—500 basis. The rolls have to be large in diameter, accurately ground and special arrangements made to heat the

Cross References: Color and Reproduction Methods, page 16; Folding and Display Cartons, page 35; Specially Processed Cartons, page 68; Printed Transparent Sheeting, page 166; Waxed Papers: Types and Uses, page 181: Protective Glassine Papers, 184; Vegetable Parchments: Types and Uses, page 185; Laminating and Combining, page 193; Resin Treated Papers, page 201; Can Decoration Processes, page 240; Printed and Lithographed Labels, page 300; Merchandising and Informative Tags, page 311; Package Inserts, page 314; General Considerations in Machine Installation, page 378; Labeling Machines and Devices, page 420; Bag Making Machinery, page 462; Folding Boxmaking Machinery, page 465; Set-up Boxmaking Machinery, page 466; Printing Inks for Packages, page, 496; Surface Coatings, page 502; Roll Leaf Stamping and Embossing, page 506; Coating, Laminating and Embossing Equipment, page 508.

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MARKEM PRINTING EQUIPMENTS

MODEL BP

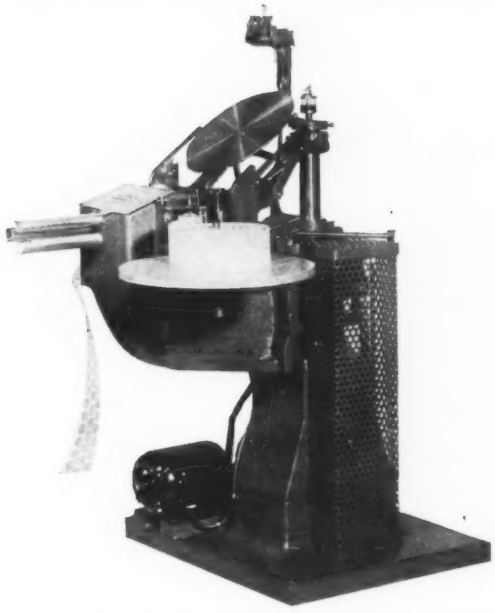
Prints entire label or fills in variables. Motor integral with machine. Provides economical method of printing on telescopic box ends, flat cartons, and labels, supplying them as needed thus eliminating inventory problem of printed boxes.

MODEL L

Heavy duty construction. Eliminates labels and label pasting expense by printing entire design and variable information on box end. Individual cut out device on double head equipment permits each printing head to be operated independently of the other. Machine also supplied with single printing head if desired.

FOR:

- **Tags and Tickets**
- **Labels**
- **Cartons**
- **Bags & Envelopes**
- **Fabrics & Tapes**
- **Plastics**
- **Metals**
- **Glass**
- **Leather**
- **Wood**
- **Rubber Material**
- **Cellulose Surfaces**
- **Lacquered Surfaces**
- **Paper**
- **Cardboard**
- **Highly Glazed Surfaces**



MODEL KD

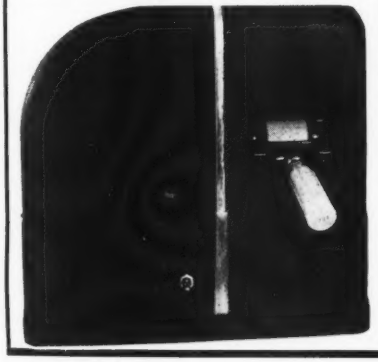
This equipment is widely used for filling in variable detail on telescopic, shell lid and set up boxes, also loose labels and labels attached to boxes. Patented type head allows quick change of insertable type.

MODEL 105

Compound Gear Drive produces heavy pressure enabling high class printing of descriptive matter on boxes and labels. If desired for single line printing, machine may be equipped with rotable type wheels to facilitate quick change of variable information.

MODEL 125

This machine feeds a blank roll of paper, gummed or ungummed, or a roll of fabric such as silk, cotton etc., to the type head, automatically prints, counts, perforates and rewinds into compact roll of labels for immediate use or for stock. Equipment will also feed, print, cut off and stack paper labels at the rate of approximately 125 per minute.



MODEL PLB

Placing trademarks on plastic articles such as radio cabinets, brush handles, jewelry cases; wood or metal surfaces, i.e., toys, filing cases, desks, etc. One or two color clearly defined high quality prints accomplished with minimum investment and expense of operation. No heat or pressure used thereby eliminating distortion and liability of breakage of articles being printed. Flat, cylindrical and irregular surfaces printed with excellent definition. High production. Low investment. Minimum service maintenance.

Producers of Brass Engraved Type, Marking Inks and Compounds, Cleaners and Solvents for the past 30 years.

Submit your marking problems to us.

Builders of Marking and Printing Devices To Meet Unusual Requirements

MARKEM MACHINE CO.

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rolls and keep this heat uniform across the face, so that the roll maintains an accurate diameter.

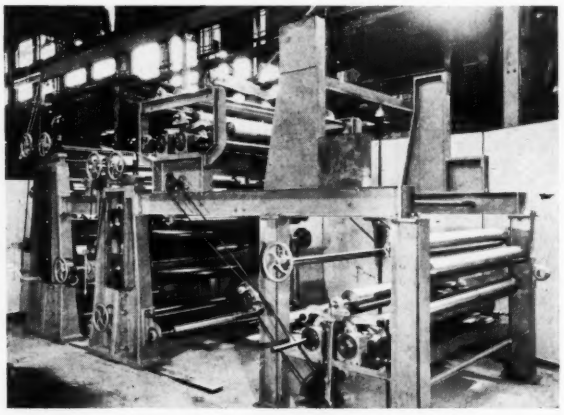
Manufacturers are producing hot melt lacquers and resins which produce high gloss, moisture-proofness, some oil-proofness and which have other advantages.

Combining

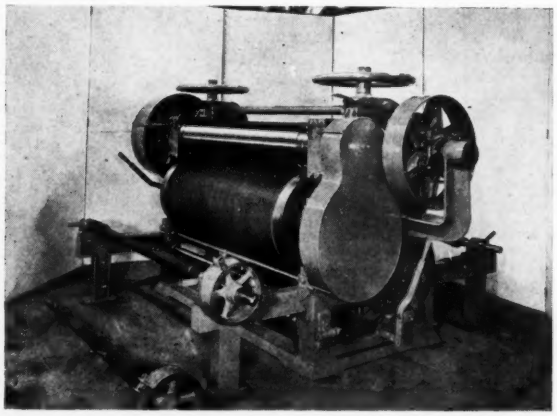
Combined stock presents a product that cannot be made on a paper or board machine. For instance, you can combine glassine, book, coated paper, cellophane or Pliofilm to paper or board, using starch, silicate, asphalt, lacquer or hot melt adhesive. The combining operation also permits the manufacturer to produce a heavy caliper board which has rigidity.

Not many years ago, combining machines were used which required a heavy coating of paste, making it necessary to pass the combined web around steam dryers.

It has been found that paste can be run having a solid content of 45 to 50 per cent, and 1 to $1^1/_2$ lbs. of paste can be applied per 1000 sq. ft., instead of 3 to 4 lbs., and the bond may be made in a single nip. In applying the paste in this fashion, no dryers are required. This has a particular advantage in that the combined web is not carried around a dryer, thereby flexing the board and lessening the rigid character that is often required in a combined web. The combined web is taken directly from the combining machine to a sheeter cutter.



3. Laminating machine for combining three, four and five plies at a speed of 400 ft. per minute.



4. Open front embossing machine of the web type. Photos courtesy John Waldron Corp.

The more simple the combining machine is, the better the product obtained will be, for in any operation the operator must have ready access to all parts and be able to lift the web from the paste rig during a short shut-down period to make splices.

Foil, both aluminum and tin, as well as cloth are used a great deal today in combining to board and paper. Foil is handled readily on these units, but requires special unroll and tension features. Cloth is handled without pressure in the combining machine as it is simply run "S" fashion.

Asphalt is being used to a great extent today as an adhesive. It makes a good bond and, at the same time, gives a protective coating of a moisture-proof nature. Its only disadvantage is its color. On some light-weight papers, it has a tendency to show through the stock. For this reason, the hot melt resins are being used to a great extent, for they provide a moisture-proof film between the webs which are combined and they have all the advantages of asphalt.

Laminating transparent cellulose or rubber derivative sheetings to paper or board requires special equipment, as both of these films are moisture-proof (where moisture-proof cellulose is used). The solvent has to be removed from the adhesive before the bond is made, otherwise blisters form.

Where the combined product is not sheeted in tandem with the combining machine and is re-wound, it is well to use as large cores as possible and not leave the combined product on the cores any length of time so that the combined web takes a set, in which case a decided curl would result.

Embossing

The final effects needed to soften the printed results and produce depth are supplied by the embossing operation which enriches the label, catalog or cover stock. This embossing may be male and female or a flat back design. Flat back has a tendency to produce sheen for, as a general rule, fine designs that produce two-toned effects are used.

Where webs are to be combined, it is best to emboss the cover paper and then combine it, for the combining operation takes away a great deal of the embossed effect. For producing the best embossed results, the steel engraved roll should be bored for steam. Usually the steel roll is in the top position and driven directly from the main drive shaft. The paper impression roll is geared to the steel engraved roll. Individual vertical adjustments are used and a quick release is part of the machine. Pressures can be maintained with screws or through a weighted lever device.

For colored effects, inking attachments are mounted on the embossing machine and the ink laid in the low spots of the embossing or it is kissed on the high spots for shadow effects; or a combination of the two.

Embossing has a semi-breaking action on the fibre stocks of paper. Therefore, where strength is required an embossing operation would not be recommended.

SHIPPING

Section Fifteen

Pages 511 to 544

SHIPPING METHODS AND CONSIDERATIONS

CORRUGATED AND SOLID-FIBRE CASES

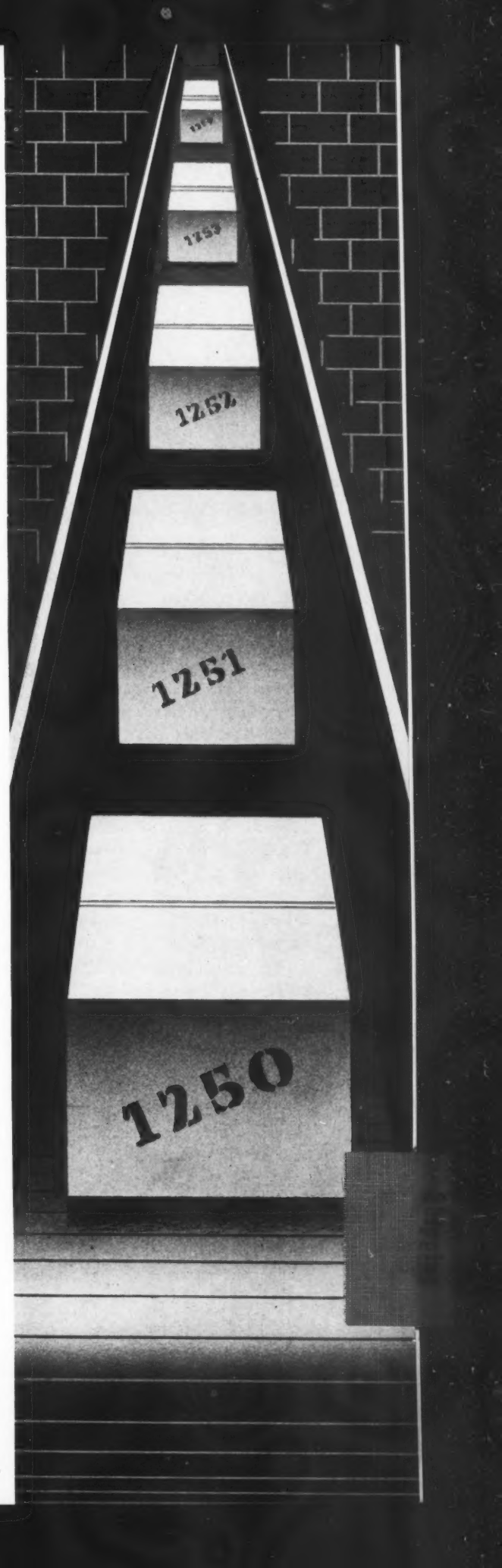
STEEL STRAPPING SHIPMENTS

WIRE STITCHING CONTAINERS

METAL AND FIBRE DRUMS

PROTECTIVE PADDINGS AND CUSHIONS

TAPE SEALING SHIPMENTS



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Shipping Methods and Considerations

Merchandise in packages and products of a packageable nature are shipped in so many diverse kinds of containers that it is impossible to lay down any precise and exact rules which would cover all products. In the articles which follow, a number of most generally used types of shipping containers are discussed and described in detail. But before the packager can logically select the container material and construction which he will utilize for shipment, a number of general factors require consideration.

Freight Classification Rulings

Most packages, moving in wholesale trade, are shipped by railroad or by motor freight. All such freight comes under the regulations of the Interstate Commerce Commission. The Commission, however, does not promulgate regulations governing packages or packing for interstate shipment, with the single exception of explosives. Regulations are promulgated by the various transportation associations themselves. Thus the railroads publish "Consolidated Freight Classifications" which provides ratings, rules and regulations applicable to freight traffic on various roads. Similar classifications are published by the American Trucking Assn., Inc., Traffic Bureau, to cover shipments by truck. Inland water carriers, insofar as they work under organized regulations, generally follow the specifications of the railroads. Parcel post shipments are covered by the regulations of the Post Office Department and are discussed in greater detail on page 25.

Taking the freight container classification rules as the basic ones, it will be found that two rules, 40 and 41, provide detailed requirements for all shipping containers utilized for all freight shipments.

Rule 40 covers shipping containers other than fibreboard. This rule prescribes construction of crates, pails, kits, tubs, barrels, casks, drums, aluminum and steel barrels, drums, kits or pails, as well as for wooden containers for dry or solid articles, jacketed metal cans, glass carboys, bags, pails made of compressed felted pulp and similar types of containers.

Rule 41 prescribes construction, size, etc, for fibreboard boxes with and without wooden frames, prescribes the manner of sealing containers and a number of other restrictions. The rule also covers fibreboard barrels, drums and pails.

Acknowledgment is made to Paul H. Meelfeld of the Hinde & Dauch Paper Co. for aid in the preparation of portions of this article.

Under both of these rules, minimum requirements for shipping containers are provided whereby products can earn the rate provided for a given product in a specified type of package. Unless otherwise provided for by special exemption, articles tendered for transportation in containers which do not fully comply with rules 40 or 41 are subject to increased freight charges. This increase amounts to 20 per cent on less than carload shipments and 10 per cent on carload shipments, with a minimum increase of $2^1/_4$ cents per 100 lbs. above the charges applicable if the containers do comply with requirements and specifications. One portion of rule 41 having broadest application to perhaps the largest number of packager-shippers is Section 2 which reads as follows:

"Fibre boxes without wooden frames must be made of 3-ply or more solid fibreboard, except as provided in Note 1, having proper bending qualities, all plies firmly glued together, no single ply less than .016 in. thick and outer ply water-proofed; or of double faced of double wall corrugated fibreboard having proper bending qualities, each outer and each inner facing being of fibreboard having proper bending qualities, facings being firmly glued to the corrugated sheet and the outer facing water-proofed. The corrugated sheets in all corrugated fibreboard referred to in this rule or in separate descriptions of articles must be made of board not less than .009 in. thick of quality sufficient to produce finished board of adequate rigidity.

"Boxes conforming to Section 2 may have two hand holes and not exceeding eight ventilation holes, each not exceeding 2 sq. in. area. Boxes may also be perforated once around center to facilitate separation of box into two equal parts, provided such perforation does not materially affect strength of box.

"The following specific requirements must also be complied with:

Cross References: Merchandising Considerations, page 11; Production Considerations, page 13; Color and Reproduction Methods, page 16; Regulations Affecting Special Trades, page 25; Boxboards: Types and Selection, page 32; Heavy Duty Multiwall Paper Bags, page 222; Case Packing and Sealing Machinery, page 450; Corrugated and Solid-Fibre Cases, page 516; Steel Strapping Shipments, page 520; Wire Stitching Containers, page 524; Metal and Fibre Drums, page 530; Protective Paddings and Cushions, page 540; Tape Sealing Shipments, page 542.

Maximum Weight of Box and Contents	Maximum Inside Dimensions, Length, Width and Depth Added	Solid Fibreboard		Double faced Corrugated Fibreboard, see Notes 2 and 3		
		Minimum Thickness of Board	Minimum Test per Square Inch	Facings		Minimum Test per Square Inch of Combined Board
				Minimum Thickness	Minimum Test per Square Inch	
(Pounds)	(Inches)	(Inches)	(Pounds)	(Inches)	(Pounds)	(Pounds)
All Fibre Boxes not otherwise provided for below, see Section 4						
40	60	.060	175	.016	85	175
65	65	.080	200	.016	100	200
90	70	.100	275	.030	135	275
Two Complete Double faced Corrugated Boxes, one fitting closely inside the other, see Section 4						
90	70			.016	85	(Each Box) 175
Double Wall Corrugated Boxes, see Section 4						
65	65			2 Outer .016 1 Center Liner .016	†85	200
90	70					275
† No test required for center liner for 65-lb. box.						
Iron-bound Three-Piece Boxes, see Section 4(i)						
125	65	.080	200			
175	70	.100	275			
Taper-Sided Boxes with Wood Cleated Ends, see Section 4(j)						
40	60	.060	175			
65	65	.080	200			
90	70	.100	275			
Wooden End Boxes, see Section 4(h)						
40	60	4-ply .090	300			
110	60	5-ply .150	480			
150	70	6-ply .180	565			
180	80	7-ply .210	640			
220	90	8-ply .240	710			
275	100	9-ply .270	800			
Reinforced Metal Strip Boxes, see Section 4(f)						
40	60	.060	175			
65	65	.080	200			
90	70	.100	275			

Of paramount interest to packager-shippers are the portions of rule 41 applying to the sealing of fibreboard containers which follow:

"Section 4. (a) Sealing strips used to cover seams of boxes must be made of sulphate paper of basis weight not less than 60 lbs. per 480 sheets, 24 in. by 36 in., testing not less than 60 lbs. Sealing strips must be 2 in. or more in width and ends must lap $2^1/_2$ in. or more over the sides or ends of box and must be firmly glued to all surfaces with which they come in contact, except that sealing strips used on the seams made where the edges of the outer flaps parallel hinges of the inner flaps, must cover the entire length of such seams. Seals must be made of paper testing not less than 60 lbs. and must bear identification marks.

"(b) Boxes without wooden frames must have all outer seams tightly closed, with no flaps projecting over edges; optional metal, not more than $2^1/_2$ in. apart, but allowing sufficient space to remove stitching device; or all outer seams must be securely sealed with sulphate paper sealing strips.

Boxes with triangular closing flaps must have all flaps meeting and such flaps must be glued throughout entire area of contact to an inner liner made of same board as box. Boxes with covers extending over sides, but not to bottom, covers resting on walls of box except as noted below, or telescope boxes of equal depth sections, covers extending to bottom, must be secured with not less than 3 metal straps completely encircling box over the sides, one in center and one at each end placed not more than 6 in. from ends of box, or must be securely fastened and box must be sealed at opposite sides with not less than 2 paper seals, 2 in. by 6 in. in size. Boxes exceeding 30 in. in length must be further reinforced at two or more places with heavy cord, cloth tape or metal straps fastened around body of box suitable distances apart to afford adequate protection. Where covers extend over sides of box not less than 3 in. and rest on walls of box, covers must be firmly glued to four walls throughout entire area of contact and a paper sealing strip not less than 4 in. wide must completely cover and be firmly glued over all outer seams."

Certificate of Boxmaker

Section 7 of rule 41 provides that all fibre boxes that are made to conform to specifications of the rule must bear a certificate of boxmaker clearly showing that the boxes do so conform. The exact form of the certificate is prescribed and requires a prominently printed statement of the number of pounds per square inch bursting test pressure the container will withstand. The certificate must also state the size limit of the container in inches and the gross weight limit in pounds as prescribed by the classification rule.

Similar certificates are required on fibre barrels, drums, pails and tubs, on felted pulp pails, on drums made of fibreboard covered veneer and on freight shipping bags.

Rules parallel to, but not quite as exacting are applied by other regulating agencies such as the American Trucking Assn., Inc., Traffic Bureau.

Container Design and Decoration

Shipping containers are, of course, primarily utilized for the purpose implied by their very name. It is their function to bring the goods to the distributing point or to the ultimate consumer in perfect condition. However, packagers have been quick to utilize the decorative and advertising possibilities offered by these containers. The advance of decorative techniques in recent years has accelerated this process and today most shipping containers for packaged goods are as carefully designed as are the sales and display packages which are shipped within them.

Container decoration processes have been developed whereby designs may be printed from rubber plates upon fiberboard containers in one, two or more colors. Both metal and fibre drums are frequently decorated, utilizing techniques similar to those used in lithographing metal cans or labeling fibre cans. Even wooden boxes are frequently labeled with lithographed or printed labels going far beyond the mere identification of the product. Such decorations upon the container do, of course, increase the cost of the shipping package. Packagers have found them sufficiently effective as advertisements, however, to more than justify the added expense. This is particularly true in those industries where the shipping

container is utilized by the retailer for display purposes. Thus in the grocery trades, shipping containers are increasingly being decorated because dealers use them as display platforms for canned goods, bottled goods, etc.

Another recently accelerated tendency involves the ingenious construction of shipping containers to the end that they acquire other utilities. In some cases, shipping containers become dispensers for the retailer. Thus one large manufacturer of cordage has designed his shipping container so as to permit the retailer to retain the coil in the container unsoiled, drawing out the cord for measurement or sale only.

In many cases, shippers are designed for consumer re-use. An outstanding example of this sort is found in the packages used for portable camp stoves and gridirons, which are frequently ingeniously constructed with integral handles or grips to permit carrying the numerous parts of the product to the point of use and re-packing in the shipping container after use.

Another example of this sort of development is found in the garden hose industry where a number of manufacturers utilize two-piece hexagonal containers designed to provide a re-coiled storage space for garden hose.

For both purposes of re-use and purposes of display, a number of ingenious constructions have been developed. Display containers are so designed as to open up to disclose display messages. Shipping containers designed for re-use are frequently made equipped with handles or other accessories (often constructed integrally with the container) and are often imprinted with data descriptive of the uses of the product or technical informative imprints facilitating the consumer's understanding of the product.

For holiday use and for merchandise sold through retail stores without unpacking from the shipping container, allover decorations are frequently utilized. These may be directly printed upon the container board or may be formed by the application of a decoratively printed facing to the board prior to fabrication.

How to Pile Shipping Boxes

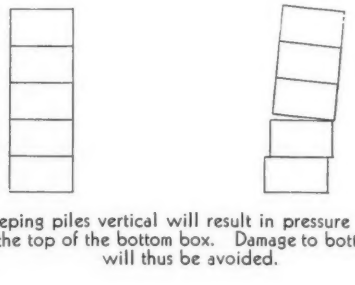
Careless piling of fibre shipping boxes causes much damage due to crushing, sagging, tipping, sliding, friction and toppling of piles. Careless piling also destroys the attractive, orderly appearance of modern shipping boxes, thus robbing them of their advertising value.

All of these unhappy results can be avoided by using reasonable care and exercising the few simple rules for piling which follow.

1. Pile on a level horizontal surface only. A sloping or bumpy floor should be leveled with flat boards before piling begins.
2. Keep piles *vertical*, not leaning or irregular at the sides of the stack.
3. Pile the boxes in each pile so that they *interlock* in a self-sustaining unit.
4. Keep printed sides and ends *right side up*, not only to protect the contents, but also to display advertising message and contents markings to the best possible advantage.

When boxes are stacked in vertical piles straight up and down, weight is properly distributed over the entire bottom surface of the box and the units at the bottom of the pile will not be pinched or crushed by undue pressure on one side or corner.

Boxes are "interlocked" by placing one row *endwise*, the next higher row *crosswise*, the next *endwise* and so on. If boxes are square, the interlocking effect can be secured by staggering the boxes in alternate rows. In either case, note that a box is never placed squarely on top of the box below it, but is placed so that it covers parts of two boxes in the underlying row.



Care in keeping piles vertical will result in pressure being distributed over the top of the bottom box. Damage to bottom containers will thus be avoided.

More important than it might seem, is the rule to keep boxes right side up. Their advertising and merchandising power is enhanced, while some products travel more safely and reach their destination in better shape if the boxes remain always upright.

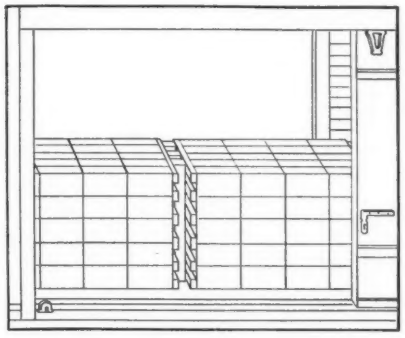
How to Load Shipping Boxes

Now that products packed in corrugated shipping boxes are transported in trains, trucks, airplanes, ships and almost every other form of freight carrier, the loading problem becomes more and more complex. And yet, although loading methods must adapt themselves to varied conditions, some basic principles will apply in all instances.

The following outline, designed primarily as a guide for loading carload shipments in freight cars, contains fundamental rules that will be of assistance in some other loading jobs.

Use "clean" cars: A "clean" car is one that has a good level floor, is free from protruding nails and is in good condition generally. The ordinary meaning of the word "clean" is, of course, another requirement. If there are protruding nails, remove them. Clean up all water or oil spots. When using refrigerator cars, cover the floor racks with corrugated board and cover bottom screens of ice bunkers.

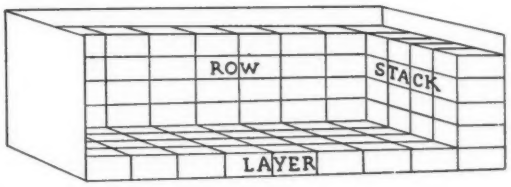
Estimate the load: With the car carefully checked and in good condition, next step is to estimate the load, to find out how many boxes the car will hold. If the load doesn't completely fill the car, determine the best arrangement for the partial load.



After loading car from ends to center and to a predetermined height, any space remaining in the center of the car should be filled with a bulkhead.

To estimate the number of boxes a car will accommodate, it is necessary to place in the car only one row lengthwise and one row crosswise, both stacked as high as space will permit. Multiply the number of boxes in the lengthwise row by the number in the crosswise row. The result obtained will determine the number of boxes the car will accommodate.

When the number of boxes isn't sufficient to fill a car, estimating the load will enable the loaders to start end rows at the right height, making a good firm part-load without confusion and delay. To determine how many layers high the part-load will be, first lay down a single



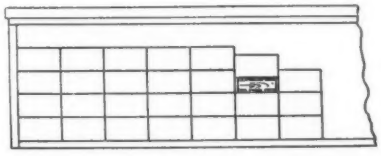
Illustrating the definitions of row, stack and layer, terms used in determining the number of boxes a car will accommodate.

layer row lengthwise of the car, then a single layer crosswise. Multiply the number in one row by the number in the other. Divide the result into the total number of boxes to be loaded and you get the number of layers *high* of the part-load. For example, you have 600 shipping boxes to load. The car accommodates 20 boxes in a lengthwise row and 6 in a crosswise row, or 120 boxes in a single layer. Dividing 120 into 600 gives you 5, the number of layers in the load. In this instance, naturally, you would start stacking the rows 5 layers high. If there were 640 instead of 600 boxes, the 40 boxes would form an incomplete sixth layer which should be held in place securely by means of an incomplete layer brace.

Loading the Car

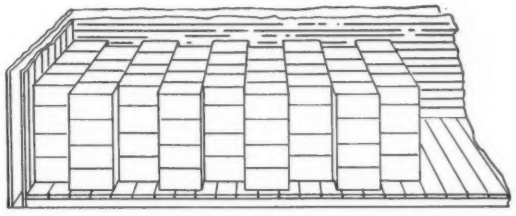
The following rules will be found to cover most loading problems:

1. Load lengthwise. Boxes should be loaded lengthwise of the car, the longest side of every box being parallel with the front-to-rear line of the car. Keep tops up. Work from ends of the car to center.
2. Load same size boxes together. When loading boxes of different sizes, keep all boxes of the same size together.
3. Use loading jack to keep boxes pressed firmly toward ends of car. The less "play" is permitted to come between the rows while loading, the safer will be the loaded merchandise.
4. Use center bulkhead to fill any remaining space. After loading car from ends to center, any space remaining at center of car should be filled with a bulkhead.
5. "Stagger" crosswise rows if boxes do not completely fill car from side to side. The extra space will be harmless if the load is arranged so that alternate rows touch opposite sides of the car.
6. Use incomplete layer brace when loading partial top layer. If there is part of a layer left over on top of the load, use a brace to lift one crosswise row of boxes, thus making the lifted row hold the incomplete layer firmly in place.



An incomplete layer brace used to hold containers securely in place during shipment.

7. Install adequate doorway protection. After loading is completed, with all braces in place, install a good doorway barricade. Important things to remember about doorway barricades—use plenty of nails to get a strong structure; space horizontal boards so that each board helps restrain *two* layers of boxes; set inside faces of the boards flush with the inside of door posts. Doorway protection also includes weather



If crosswise rows do not fill car from side to side, stagger the rows with alternate rows touching opposite sides of the car.

stripping at car doors to prevent water damage. Where outside weather stripping is not provided, use several thicknesses of paper for an inside job, tacking to door post from top to bottom, wrap around door post and then tack again. Loose ends will lie snug against door when it is closed.

In shipping by air express, loading is done by the carrier. There are no special rulings or requirements covering packaging of products for air express. Pack the merchandise in corrugated shipping boxes as you would pack for railway express shipment. No outside wrapping is necessary. Just seal the package, attach the address label and mark plainly "Ship by air express."

Corrugated and Solid-Fibre Cases

A fibre shipping container is a tough, efficient and economical outer package built to withstand the wear and tear of freight, express and parcel post shipment. It is used for shipping all manner of commodities up to a weight limit of about 90 lbs. There are two types of these boxes—the laminated walled "solid-fibre" box and the cellular "double faced corrugated" box.

The fibre container affords a satisfactory means for shipping fragile articles, as well as heavy commodities of relatively small size. Liquids in glass, for instance, are moved in these boxes with a minimum of breakage. The bottles are usually packed in cells formed by partitions of corrugated fibreboard. Another method of packing, which is in greater demand, is the "unit carton" system. Articles such as electric irons, lamp fixtures, etc., are placed in an individual carton, which also contains the necessary accessories. A certain number of these cartons, say two dozen, are then shipped in a container so designed that the contents exactly fill the box.

Nomenclature

Fibre containers: The general term which includes both corrugated and solid-fibre cases. The words "fibre" or "fibre boxes" are often used to designate solid-fibre boxes, but this is open to misconstruction.

Corrugated fibre containers: Usually simply "corrugated cases," generally indicates boxes made of single strength, double faced corrugated board.

Corrugated board: A general term and may mean any of the grades named below.

Unlined corrugated: Corrugated paper alone with no "liners" or "facings." It is usually made of 0.009-in. straw, but sometimes is 0.009-in. chip and, unless otherwise specified, is the usual or large corrugation, $^3/_{16}$ in. in height. It is used as wrapping material for lamp chimneys, etc., and has the disadvantage of stretching and thus losing the cushion value of the corrugations. It usually comes in rolls.

Single faced board: Has one liner which may be of straw, chip or jute and usually either 0.009 in., 0.012 in. or 0.016 in. thick. It is used for inner packing and wrapping and is usually sold in rolls 36 in. wide, 250 ft. long, weighing from 60 to 75 lbs.

Double faced board: Double lined corrugated is made with two liners of straw, chip, jute or kraft and is described by the railroads as "single strength." It may be test or non-test board and cannot be rolled.

Double strength board: Often spoken of as "double double" and "double walled," but the term "double strength" is preferable, as this is the designation used by the railroads. It is a combination of double face and single face, having three liners and two corrugations and is from $^3/_8$ in. to $^1/_4$ in. thick.

Straw paper, or strawboard: Used for corrugations, is 100 per cent wheat straw, although rye, oat and rice straws are occasionally used. Strawboard is sometimes imported from Europe, usually from Holland. It is generally made 0.009 in. thick, for corrugating, although 0.012 in. or heavier is sometimes used for this purpose. Chestnut waste, sulphate, sulphite and pine wood fibreboard is also permitted by the railroads for corrugations.

Chip or chip board: Made from mixed waste papers and is usually 0.009 in., 0.012 in. or 0.016 in. thick. Corrugated board with chip liners is usually used for interior packing.

News or news board: Made of newspapers and is sometimes used in place of chip, though more expensive. The other grades of boxboard do not enter, to any great extent, in the making of shipping containers.

Liners: The facings of single face, double face or double strength corrugated board. They may be 0.009 in., 0.012 in. or 0.016 in. chip or 0.016 in., 0.018 in., 0.023 in. or 0.030 in. jute or kraft. Solid-fibre liners are usually 0.016 in. jute or kraft. "Liner" is also used to describe the interior packing sheet which lines the four sides of a case and which is usually made of double faced chip or straw corrugated board.

Jute: Really a misnomer, as jute is no longer used in this industry. A "jute" liner is a mixture of new kraft or sulphate fibres and high grade mixed papers.

Filled kraft liners: These are kraft liners with a small proportion of waste paper or groundwood added.

All-kraft liners: These contain no mixed papers, but are usually made manufactured as 100 per cent sulphate kraft. They are among the new developments that are to be found.

Solid fibre: A laminated board built by gluing several plies of board together with silicate of soda or vegetable adhesive and is often referred to as "fibre" or "fibreboard." The two outer plies are made of jute or kraft. Solid fibre is usually made in 0.060-in., 0.080-in. and 0.100-in. thicknesses as called for in the Official Classification, but some 0.090-in. and 0.120-in. board are occasionally used in the making of shipping containers.

Single lined solid fibre: This is not often used for shipping containers, but is applicable where only a single bender is required and permitted.

Test and non-test board: In this industry this usually applies to board that does or does not comply with the railroad requirements on bursting strength.

Express stock: The correct name of this corrugated board is *jute and chip* which describes its construction. At one time this was acceptable for express shipments. The express rules are now essentially the same as the

freight rules except that for most items of less than 35 lbs., jute and chip may still be used.

Mullen or Cady test: These two instruments register the bursting strength of a board, presumably in terms of pounds per square inch. Actually the results are not exactly in these proportions and for this reason many people refer to the figures as Mullen "points" or "units." Both of these instruments are official as shown in and established by Rule 41.

Webb tester: This instrument overcomes many of the objections to the Mullen and Cady test by testing the liners of double face corrugated board separately, but it is not recognized as official by the railroads.

Rule 41: That part of the Official Classification which itemizes the specifications for corrugated and fibre shipping containers when used for freight shipments.

Rule 18: This does the same for express shipments in the Official Express Classification.

The Bureau of Explosives: Issues a handbook containing express and freight container specifications for dangerous articles.

Freight Container Bureau: Issues the official specifications for freight shipment of fresh fruits and vegetables.

Food Administration Specifications: These are the same as the so-called *National Canners Association Specifications* and specify higher test corrugated and solid-fibre cases for canned goods than are required by the railroads. They are regarded as being unofficial.

Certificate of boxmaker: This is sometimes known as the "imprint" or "class stamp." It defines the bursting strength of the container and weight and dimension limit, as well as identifying the boxmaker.

Silicate of soda: This is an adhesive sometimes used for sealing containers and also used in the manufacture of corrugated and solid fibreboard. Another name is *water glass* and it is referred to as "silicate."

Point: In this industry a "point" is one thousandth of an inch; 0.060-in. board is always referred to as "sixty point" board.

Height, depth: These synonymous words indicate the distance between the openings of a box, i.e., from top to bottom. "Height" is preferable as in some industries "depth" means from front to rear. The height of a slotted carton is always understood to refer to the last dimension.

Girth: Used in the Parcel Post specifications as the distance around the parcel at its thickest part.

Length: In P. O. specifications is the greatest distance in a straight line between two ends.

Nests or partitions: These usually consist of vertical divider pads, criss-crossed and slotted half of their height so that they interlock to form individual cells to receive the product. A divider is a vertical pad which has no slots.

Star-cut pad: This corrugated pad has radiating die cuts and is used to separate large glass objects, such as bowls and illuminating glassware. It is also known by such descriptive and imaginative terms as "rat-trap pad" and "pie-cut pad."

Die-cut work: Made on a special press and the initial cost of the die and extra makeready must be allowed for. The ordinary fibre box equipment works in straight lines, at right angles, so that other unusual work is made on a separate cutting and creasing press.

Crease and score: Used interchangeably but "crease" is preferable as "score" may mean a knife cut, as it does in the set-up box industry. Such a cut score is not used in the fibre container industry.

Joint and seam: The railroads define "joint" as the result of the operation done by the boxmaker in taping or stitching the fourth corner of the box; and "seam" as the juncture that is closed by tape in sealing.

Bales and bundles: This refers to Section 4 (*c*) of Rule 5 and means that items accepted under this category may be shipped in corrugated or solid-fibre containers *without* restrictions as to weight or dimensions.

Printing plates: Solid fibre is printed from brass plates or electrotypes. Corrugated board is printed from rubber plates which are cast from type or prepared in the usual way from a wood cut.

Container Marking

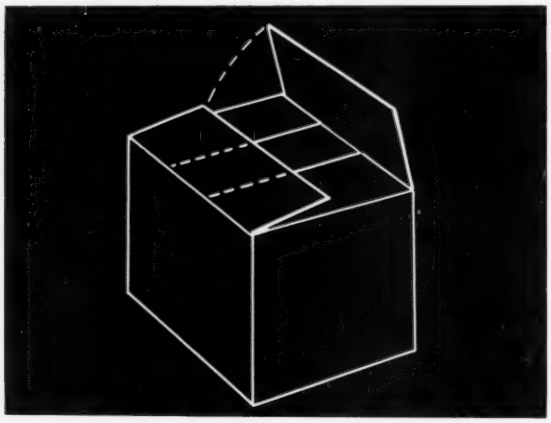
Shipping containers, particularly those of modern printed design, serve important functions in addition to those of mere transportation. It is of value, therefore, in insuring proper handling and in preserving the display and advertising value of the container to make certain that proper, legible and attractive addressings, code markings and datings appear on the container. Where these can be anticipated in advance, space can be allowed in the design for such factory-applied legends and thus these various markings need not mar the appearance of the container.

Code marking and dating equipment exists in a number of factories as an adjunct to the container sealing equipment, being installed as a part of the latter machinery. Other plants find it desirable to mark packages individually, rather than in "runs," and therefore use some variety of hand operated stenciling equipment. Addressing stencils are very widely used, being cut on machines of relatively low cost and retained almost indefinitely for re-use as needed. Such stencils are usually cut from oil-board and produce a far neater form of lettering and a far less expensive one than could be applied by most other available methods.

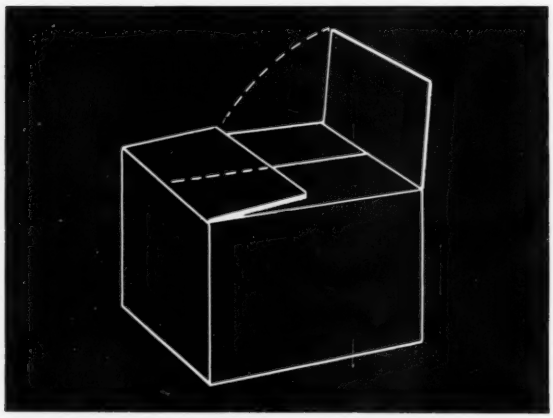
Stencils for dating, code number marking and similar purposes are frequently made of a more permanent material, such as sheet brass, as these tend to receive far harder and more frequent usage than the average single address stencil.

In considering stencil markings, particularly for export packages, Parcel Post shipments and Railway Express shipments, it is advisable to consult in advance with the proper shipping agencies who frequently impose restrictions as to minimum dimensions of lettering, phrasing, etc.

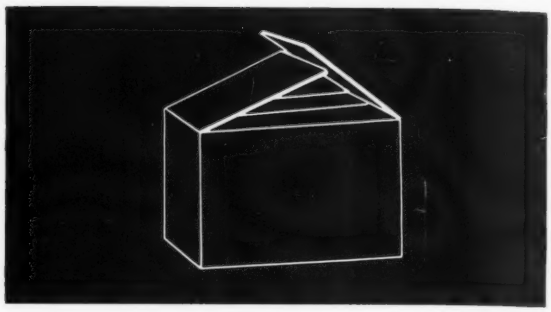
Below and on the following pages are descriptions of the more common types of corrugated and solid-fibre container constructions.



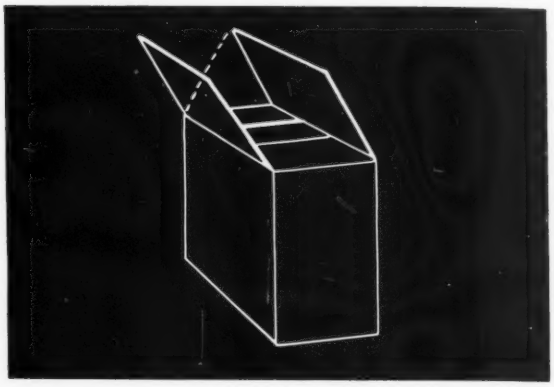
REGULAR SLOTTED CONTAINER. This type of slotted container is probably in more general use than any other, both because of its economy of production and its adaptability to the shipment of so many commodities. It is so made that the outer flaps meet at the center of the box. The inner flaps do not meet. When the article shipped does not require the protection afforded by two thicknesses of corrugated board over the entire areas of top and bottom, this container is very safe, convenient and satisfactory. It is made in all grades of board to meet the requirements of varied commodities. Regular slotted containers must be sealed either by gluing the flaps or completely covering all outer seams with paper sealing strips or stitching together the flaps at and along all seams by metal rivets, staples or stitches.



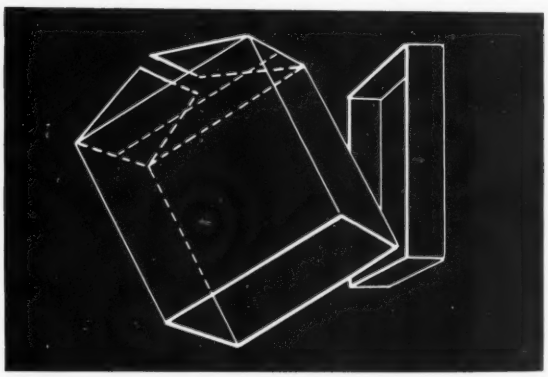
CENTER SPECIAL SLOTTED CONTAINER. Made of the same grades of board as the regular slotted container, this differs only in that it has more strength at the top and bottom of the box because the outer flaps and the inner flaps meet at the center of the box. Thus, all end areas are entirely covered by two thicknesses of board. As with the regular slotted container, either glue or tape, or both, or stitching may be used to effect a seal.



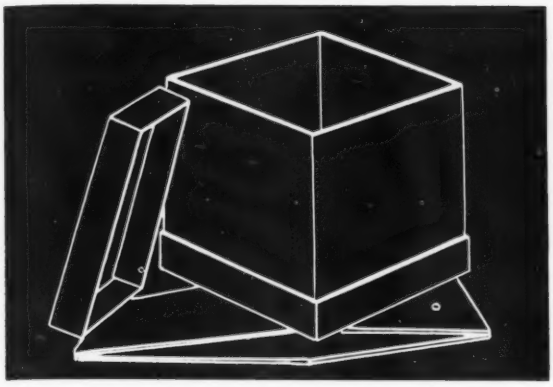
OVERLAP SLOTTED CONTAINER. The outer flaps, instead of meeting at the center or side of the box, overlap, generally about 2 in. It is made of all grades of materials and in all sizes. Sealing requirements are the same as for the regular slotted container.



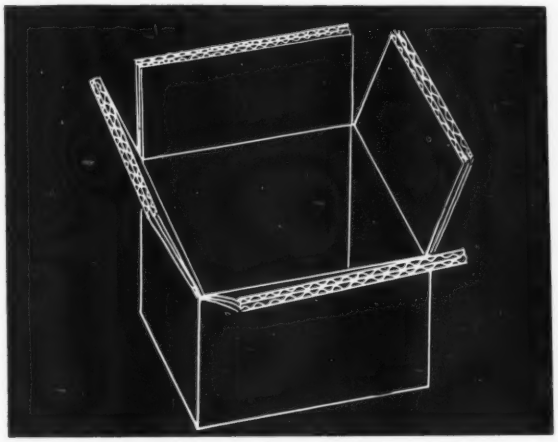
FULL FLAP SLOTTED CONTAINER. A variation of the general slotted type of container in which the outer flaps completely overlap. Sometimes the dimensions of the box require this type to insure adequate strength, while at other times the box is used to provide additional strength to more fully protect its contents.



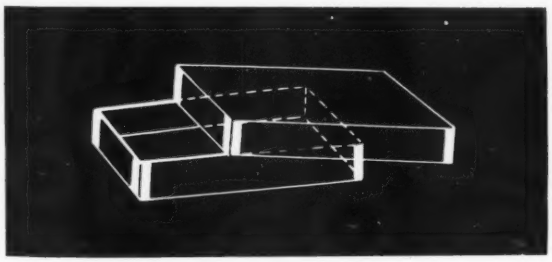
HALF SLOTTED CONTAINER. The half slotted container differs from other types only in the fact that it provides for a separate cover instead of having both ends made in slotted container style. Usually adopted for use as a cracker caddy.



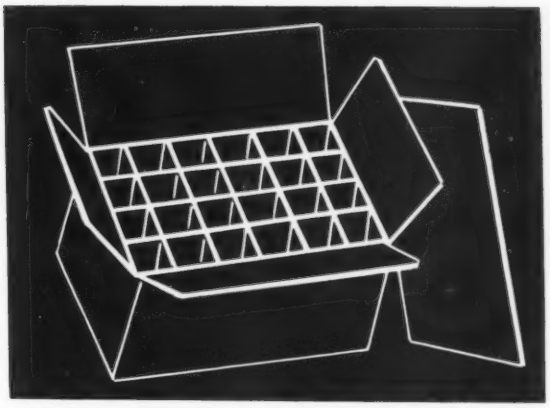
DOUBLE COVER BOX. A type popular with manufacturers of commodities which do not readily ship in standard containers. If the goods do not fill the box, the body is cut down to the level of the contents. Consists essentially of the side wall section without flaps plus top and bottom covers. The body of box is folded flat for shipment and is packed separately if the covers are to be furnished with collapsible corners.



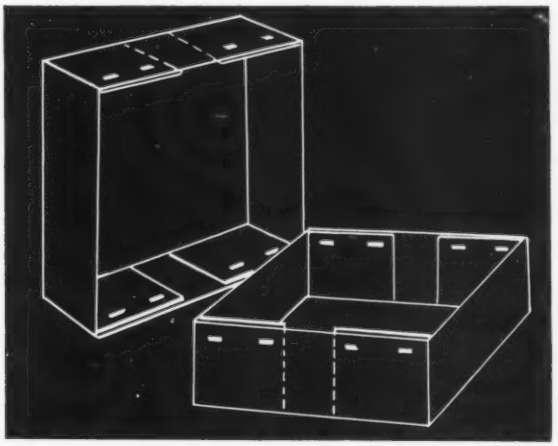
DOUBLE WALL CONTAINER. Sometimes the ordinary type of corrugated container is not strong enough. In such cases, a double wall container provides an ideal solution. Rule 41 permits higher gross weights for given dimensions when double wall containers are utilized.



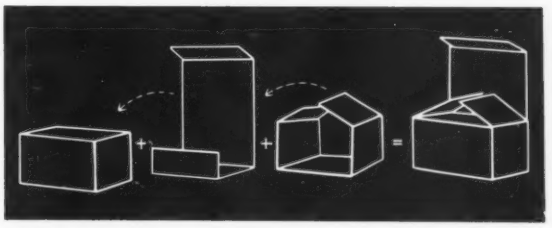
TELESCOPE BOX. Essentially a stayed set-up full-telescoping box made of corrugated or solid board. Designed primarily for use where but little depth is required.



RESHIPPING CONTAINER. Manufacturers of bottles and glass jars use this type of box to ship their product to manufacturers of bottled goods. The packers, after filling the bottles and jars, replace them in these cases and ship them on to their customers.



TELESCOPE DESIGN BOX. A type in which body and cover fold flat for shipment and are erected with staples just prior to packing.



DOUBLE LINED SLIDE BOX. Also known as three-piece Lambert box. The three parts of the box, when put together, provide a double thickness of board on every side of the commodity. It may be made in any size or grade of material, although it is usually used in comparatively small size and as an inner container.

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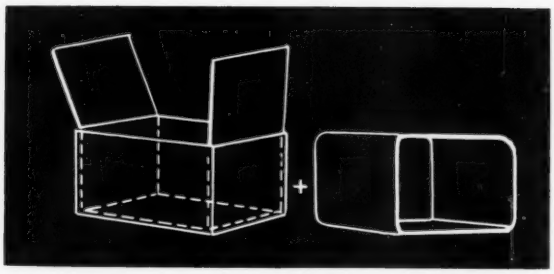
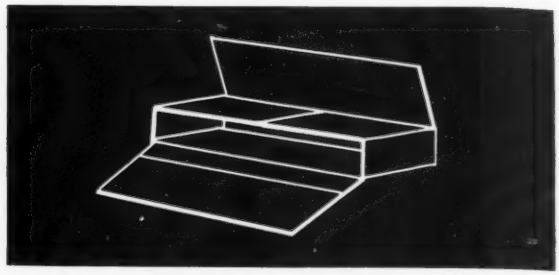
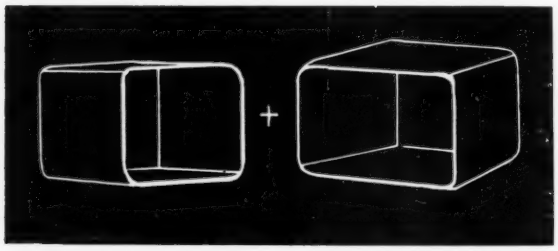


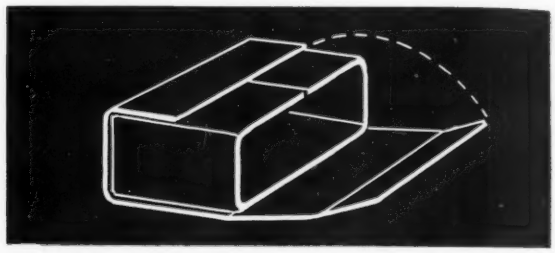
TRIPLE SLIDE BOX. Like the double lined slide box, this has two thicknesses of board at all sides of the commodity it contains.



ONE PIECE FOLDER. For books, catalogs and similar flat objects. Consists of a single piece of board properly scored. Used principally for parcel post shipments.



DOUBLE SLIDE BOX. When the contents do not require as much protection as is afforded by the triple slide box, this form may be utilized.



TWO-PIECE FOLDER. Available in any size and grade of material. Shipped flat to user. Used principally for parcel post shipments, but may be used for freight.

Steel Strapping Shipments

Metal strapping has achieved wide adaptation among shippers as a means of securing either or all of three aims: one, a reduction in shipping weight, two, the achievement of a high degree of protection against pilferage and tampering and three, a reduction in the overall cost of the shipping container.

Steel strapping and wire bindings have been recognized by the Federal Government and by shipping and railroad authorities as an aid in economical distribution and shippers have, therefore, been permitted, in frequent instances, to utilize lighter or less expensive containers when these are properly reinforced with strapping or bindings. Freight classification rules often require the use of steel straps on bundles and bales as well as many specific articles packed in wooden boxes, cartons or on skids. Such requirements also apply to a very wide range of export packs which are, of necessity, reinforced to prevent damage and theft.

Metal bindings most commonly used are flat metal straps or bands and wires. Flat metal strapping is available in unannealed and annealed varieties, otherwise known as nailless and nailed strapping. The latter type is rapidly being displaced by the nailless type which can be applied more quickly and effectively.

Wire strapping is also of two kinds. One consists of a single wire drawn up tightly by a tension device and the ends fastened together, usually by twisting; the second consists of multiple strands of wire twisted together and is usually applied at the ends of wooden boxes and held in place by nails.

Recent developments include colored strapping and printed strapping. Both, and especially the latter, are used to provide an identifying brand and to add further discouragement to pilferage.

Strapping on Wood Cases and Crates

Researches conducted by the Forest Products Laboratory of the United States Forest Service have led to the con-

Cross References: Shipping Methods and Considerations, page 512; Corrugated and Solid-Fibre Cases, page 516; Protective Paddings and Cushions, page 540.

clusion that "the thickness of lumber required in a nailed wooden box to give it adequate strength may safely be reduced 20 to 40 per cent if properly bound with metal straps." The extent of such reductions in lumber thicknesses may be judged by considering recommendations for export packages as sighted in the publications of the Bureau of Foreign and Domestic Commerce of the U. S. Department of Commerce. Thus, where thickness of $^{7}/_{8}$ in. is required for the sides, top and bottom of unstrapped containers, the use of one strap permits a reduction in thickness to $^{5}/_{8}$ in. and the use of two or more straps permits a further reduction to $^{1}/_{2}$ in.

Strapping on Cartons

Both fibre and corrugated boxes can be made more secure with steel strapping and the straps often serve not only as a reinforcement, but as a means of closure. Hence by merely snipping the straps, the package can be quickly opened, without damage to the carton. This is a decided advantage when the contents are to be inspected or altered and the same container used for re-shipment.

Strapping on Bales and Bundles

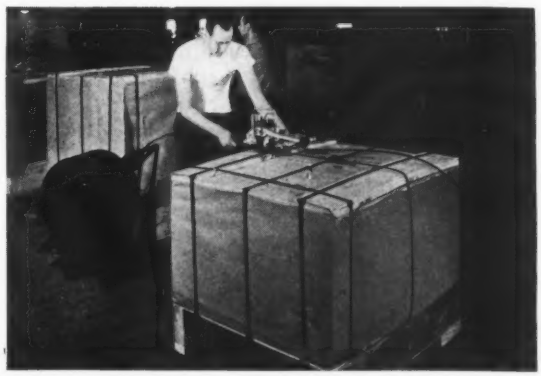
The security of compressed bales is due almost entirely to straps. In fact the textile industry was one of the first principal users of steel strapping. This field can be divided into three general groups:

1. Bundling of several packages into a unit: Two or more cartons or wood boxes can be strapped to make a single package. The advantages of this method are evident as only one shipping label is required—handling is speeded up and none of the boxes can become lost or separated from the rest. Theft of smaller packages is eliminated and the fewer units handled frequently results in lower traffic costs.

2. Bundling to eliminate containers: This type of bundling can be applied to a number of products which do not actually require a package. Both the container cost and freight on its tare weight are saved through the use of steel strapping.

3. Classification of cartons and fibre-wrapped packages as bales or bundles: Carriers permit steel strapped cartons and fibre-wrapped packages of some commodities to be classed as bales or bundles.

1



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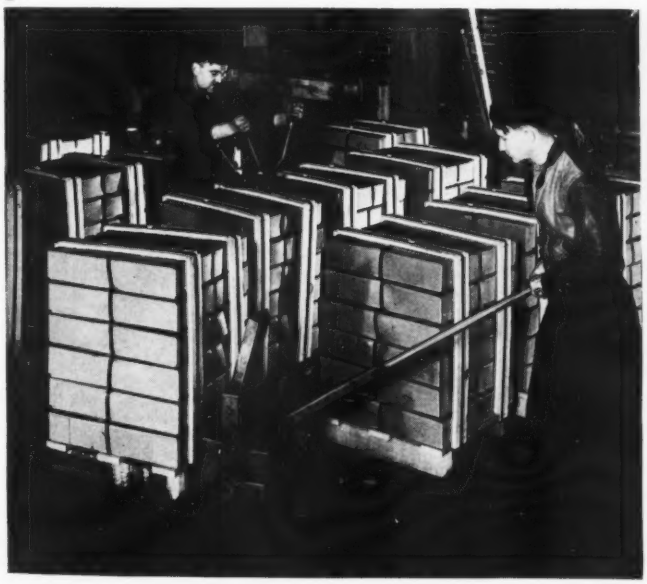

3

1. Portable strap-reel holder facilitates strapping paper onto skids for shipment. Courtesy Acme Steel Co. **2.** Stripped steel coiled and packed in stitched fibre cartons for shipment; steel strapped six packages to the skid. Note individual carton straps and wood frames under skid straps. Courtesy Acme Steel Co. **3.** Steel strapping used as car-door bracing for mixed shipment of cartoned goods. Strap here serves to minimize pilferage danger, as well as to secure shipment. Photo courtesy Signode Steel Strapping Co.

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ACME STEEL COMPANY

General Offices: 2834 Archer Avenue, Chicago

103 Park Avenue, New York City
1025 Sixth Ave., S, Seattle
603 Stewart Ave., S.W., Atlanta
432 Bryant St., San Francisco
4901 Pacific Blvd., Los Angeles
990 Station St., Vancouver, B.C.
National Cartage Whse, Winnipeg, Man.
369 St. Paul St., W., Montreal
32 Front St., W., Toronto, Ont.

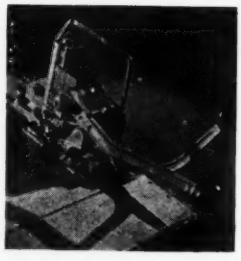
ACME *Steelstrap* ASSURES SAFER, LOWER COST HANDLING AND SHIPPING

For all kinds of shipping packs — cartons, boxes (wooden or fibre), crates, bundles, skids — Acme Steelstrap provides a stronger, safer container yet reduces shipping and handling costs — savings from 10% to 40% are not uncommon. Important labor, material and time reductions are made possible. Acme Steelstrap is being used successfully by thousands of concerns in shipping virtually every type of product.

Small packages can be bound into one unit with Acme Steelstrap, thus securing a more economical express classification. Large units reinforced with Acme Steelstrap may be shipped in lighter weight containers for additional economies.

No matter what you make or how you ship it, the chances are ten to one that Acme Steelstrap can save money for you. Let Doc Steelstrap make a *free* diagnosis of your shipping methods. He's had over 50 years' experience in reducing shipping costs. Write for illustrated booklet.

Acme Steelstrapper



The *new* Acme No. 2 Steelstrapper is the latest addition to the only complete line of strapping equipment which *combines* the tensioning, sealing and cutting operations with an automatic seal feed. Made to eliminate lost motion, this new Steelstrapper is built for speedy application to heavy packs including skid loads.

There is an Acme tool for every need. Write for details about the money and time-saving Acme tool for *your* requirements.

The sealed joint of Acme Steelstrap has practically the same strength as the strap itself.

Acme SilverStitch

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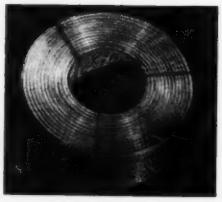
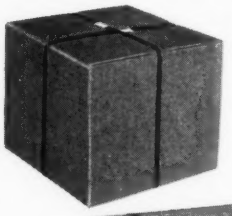
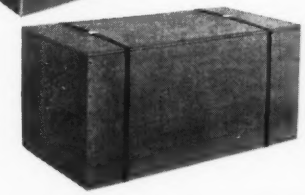
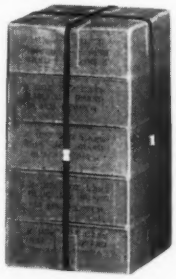


Stapling is faster—more boxes can be stitched per day, with the *one-piece* 5- and 10-lb. coils of Acme Silverstitch. There are fewer stops for coil changes. Economy and satisfactory results are assured by uniform temper, width and thickness.

Silverstitch is GALVANIZED which provides rust resistance, durability and attractive appearance. Write for *free* test coil. State size required.







ACME *Unit-Load* PROCESS FOR CARLOAD AND L. C. L. SHIPMENTS

The Acme Unit-Load Process is a quick, inexpensive, flat steel band bracing procedure enabling every shipment to reach destination in perfect order. Unnecessary and costly bracing materials are eliminated by this scientific method of bracing carload and l.c.l. shipments. Savings are made on freight charges, labor costs are lowered, damage claims are eliminated. Full details about the Acme Unit-Load Process is contained in the Unit-Load booklet. It illustrates the numerous ways in which industry is using the Acme Unit-Load Process. Write for your copy today.

Acme ColorStitch

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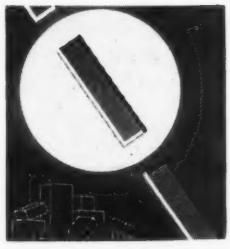
Stitching wire in colors that blend or contrast with the printed carton gives added "*eye-appeal*" to cartons and boxes. The slight extra cost is more than offset by improved appearance. Write for sample color card.

SILVERSTITCH and COLORSTITCH are available in these sizes: .103 x .014, .103 x .107, .103 x .020, .103 x .023, .060 x .024 and .060 x .0205.



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ACME *SilverStitchers* FOR SPEEDIER—EASIER—MORE ECONOMICAL CARTON STITCHING

Acme Silverstitchers bring new speed, ease and economy to box stitching. In many industries manufacturers have been able to effect important savings with Acme stitching equipment. Sealing by stitching is five times faster. The holding power averages, by actual tests, twice as strong as other sealing methods. From the standpoint of economy in material, it cuts sealing costs as much as 50%. Acme wire and equipment function as a unit. Combined with Acme Silverstitch, Acme Silverstitchers give stitching satisfaction year after year.

AVAILABLE IN 3 TYPES

The straight arm Silverstitcher is a heavy duty Silverstitcher designed for fast stitching of sides and ends of many types of packs. The bottom Silverstitcher is designed for low-cost, smooth, positive bottom stitching. Combining the straight arm and bottom stitching units in one machine, the combination Silverstitcher is the recommended all-around stitching machine.

ACME *SilverStitcher* FEATURES

Adjustable single pedal control. ● Few moving parts mean lower maintenance costs. ● Vital parts are reversible. ● Low power consumption. ● Heavy duty construction for long service. ● Silent V belt drive. ● Wide, comfortable foot-rest treadle. ● Resilient one-piece feed wheels. ● Handles two gauges of Silverstitch without adjustment. ● Conveniently placed starting and stopping toggle safety switch. ● Overfeed with adjustable spring tension and unique wire friction plug provide constant and even flow of wire. ● Extra long life of main drive anti-friction bearing assured by use of genuine Promet bronze. ● Mechanism guarded for maximum safety. ● Individual parts are precision made and are interchangeable. ● Friction brake spring maintains continual pressure on clutch hub and simplifies brake adjustments. ● Easy to operate . . . runs smoothly and quietly . . . efficient . . . modern. ● Economical. ● Guaranteed.

ACME *SilverStitcher* SPECIFICATIONS

STRAIGHT ARM SILVERSTITCHERS are available in three throat sizes—12″, 20″ and 30″. These figures indicate the maximum carton depths which can be accommodated and represent the distance between the front of the frame and the clinching point. The size required is determined by the depth of the container or the nature of the article to be stitched.

Distance from floor to top of arm (clinching point):
On 12″ size—44″, on 20″ size—46″, on 30″ size—42″ and 48″.

Distance from top of base to top of arm (clinching point):
On 12″ size—40″, on 20″ size—42″, on 30″ size—38″ and 44″.
Sizes of Silverstitch used—all standard sizes which include .014, .017, .020, .023; .060 x .024 and .060 x .0205.

Width of crown of standard staples:
On 12″ size—$^{7}/_{16}$″, on 20″ and 30″ sizes—$^{1}/_{2}$″.

Motor: $^{1}/_{4}$ HP single-phase long hour duty; 110-220 volt, 60 cycle, A. C. Other voltage, current and phase required, available at slight additional cost.

Speed: Depending upon application and dexterity of operator, speed is set between 185 to 300 staples per minute. For a small added charge an adjustable variable speed attachment can be furnished. This will handle the complete range mentioned above.
Diameter of silent action V belt driving pulley—14″.

Floor space required:
On 12″ size—20″ x 36″, on 20″ size—22″ x 44″, on 30″ size—22″ x 50″.

BOTTOM SILVERSTITCHERS are available in two throat sizes—12″ and 20″. These figures represent the distance between the front of the frame and the clinching point in stitching position.
Maximum dimensions of packs handled on 12″ size—24″ x 24″ x 40″. Maximum dimensions of packs handled on 20″ size—40″ x 40″ x 42″.

Distance from floor to top of arm (clinching point).
On 12″ size—44″, on 20″ size—46″.

Distance from top of base to top of arm (clinching point).
On 12″ size—40″, on 20 size—42″.
Sizes of Silverstitch used—all standard sizes which include .014, .017, .020, .023; .060 x .024 and .060 x .0205.

Width of crown of standard staple—$^{1}/_{2}$″.
Motor: $^{1}/_{4}$ HP single-phase long hour duty; 110-220 volt, 60 cycle, A.C. Other voltage, current and phase required, available at slight additional cost.

Speed: Depending upon application and dexterity of operator, speed is set between 185 to 300 staples per minute. For a small added charge an adjustable variable speed attachment can be furnished. This will handle the complete range mentioned above.
Diameter of silent action V belt driving pulley—14″.

Floor space required:
On 12″ size—20″ x 38″, on 20″ size—22″ x 48″.

COMBINATION SILVERSTITCHERS are available in two throat sizes—12″ and 20″.
Width of crown of standard staple—$^{1}/_{2}$″. Other specifications same as those above.

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4. Wire tying six wood boxes of cheese to form convenient shipping unit, weighing approximately 33 lbs. Note reel unwinding device at rear of table. Photo courtesy The Gerrard Co., Inc.

Steel Strapping on Skids

This is a most convenient method of shipping merchandise. Although paper has been skid-loaded for years, the range of products now benefited extends to bricks, motors, tin plate, lumber, tubing, etc. With this system, the commodity is strapped to an inexpensive skid or pallet. Hand or power trucks quickly move the unit, which would be too heavy for manual handling. Space is conserved when skids are stacked on one another. Steel strapping makes the skid idea possible and profitable to both shipper and receiver.

In recent years a number of shippers have turned to the use of non-returnable skids or pallets, having found the strapping method sufficiently economical to permit the absorption of the skid or pallet cost by a single shipment.

Strapping Equipment

A number of pieces of accessory equipment have been developed to facilitate the use of both steel strapping and wire bindings. Reel holders of both a fixed and a portable nature have been developed to make the job of getting the strapping material up to the work and keeping it from tangling an easy one. A wide range of tension tools have been developed for applying, tightening and sealing the straps. Some of these devices automatically cut and seal the binding when the proper predetermined tension has been achieved.

Wire Stitching Containers

Assembling and sealing of containers by means of wire stitching is much used because of the ease of its application and the strength and security of the joint. Furthermore, if warehousing and repacking are desired, the stitches can be removed with a screwdriver or special tool without appreciable damage to the case. Wire stitching is of general application, irrespective of the size of the container, the construction of the flaps or the kind of board of which the container is made.

All wire stitching machines are variants of the simple box stitcher, which comprises a stitcher head, a body or frame supporting the head and also containing the driving mechanism, a base supporting the body and a horizontal arm for holding the work. The end of this arm contains the clinching device. Stitching heads are of two general types, in one of which the wire is fed from the side while in the other the wire is fed from the top. Both types are constructed with means for feeding the wire and cutting it in predetermined lengths, receiving the piece of wire and transferring it to the bending mechanism, bending the ends of the wire to form legs and driving the formed stitch through the work, a supporter being provided that supports and guides the stitch while being driven. The arm contains a grooved clincher which receives the legs of the stitch and bends them inward and tightly against the under side of the container on which work is being done.

Stitcher heads with side wire feed are usually employed for stitching containers, since they can be more ruggedly constructed, while the vertical feed type is used for multiple head work because the heads can be placed closely together.

The clinching arm is quickly adjustable, up or down, to accommodate varying thicknesses of work and the wire feed is also instantly adjustable. Angle arms can be obtained for handling special classes of work and adjustable gauges of various sorts can be had for facilitating repetitive operations. Machines are available with the stitcher head set at an angle so that stitches can be driven at 45 deg. to the grain or the corrugations of the container board.

Many different sizes and shapes of wire may be used. The width of the crown can be changed, provided the

The aid of G. Prescott Fuller of the Dexter Folder Co. in the preparation of this article is gratefully acknowledged.

Cross References: Stayed and Stapled Cartons, page 72; Heavy Duty Multiwall Paper Bags, page 222; Box and Bag Stapling Equipment, page 446; Shipping Methods and Considerations, page 512; Corrugated and Solid-Fibre Cases, page 516.

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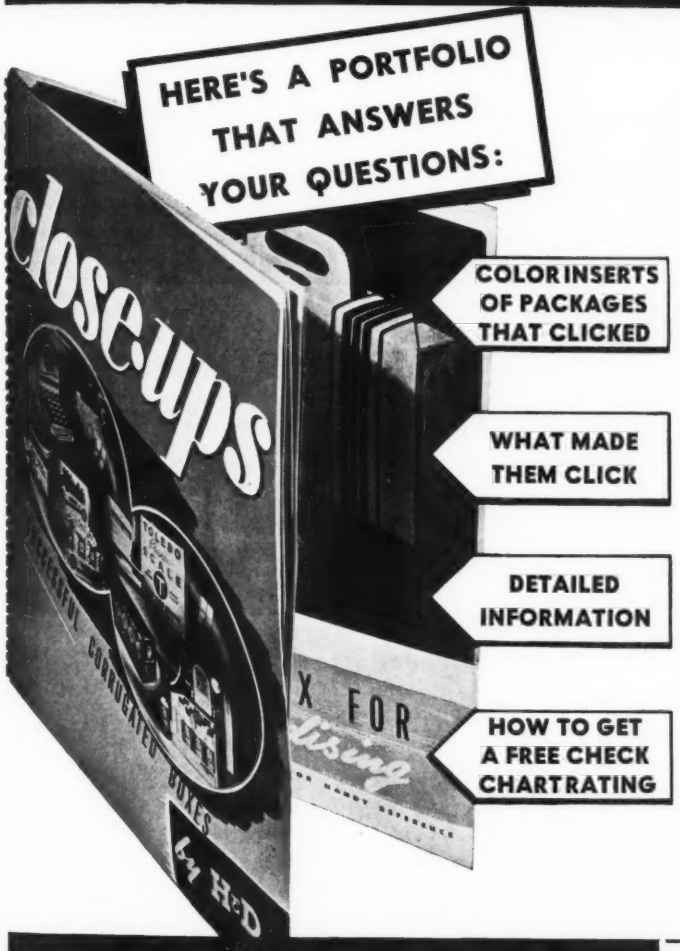
WHAT *do you know about corrugated boxes?*

HOW *do you know you have the best box for the job?*

WHY *not see if your packages can be improved?*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WHAT MADE THEM CLICK
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that patented Duplex shipping-display boxes move more merchandise—increase profits—at point-of-sale?

that you can get expert package design and package engineering service without cost or obligation . . from the H & D Package Laboratory?

that you can get a comprehensive analysis and an impartial rating of your present shipping box by asking for an H & D Check Chart Rating? That this free service may point the way to greatly increased package effectiveness?

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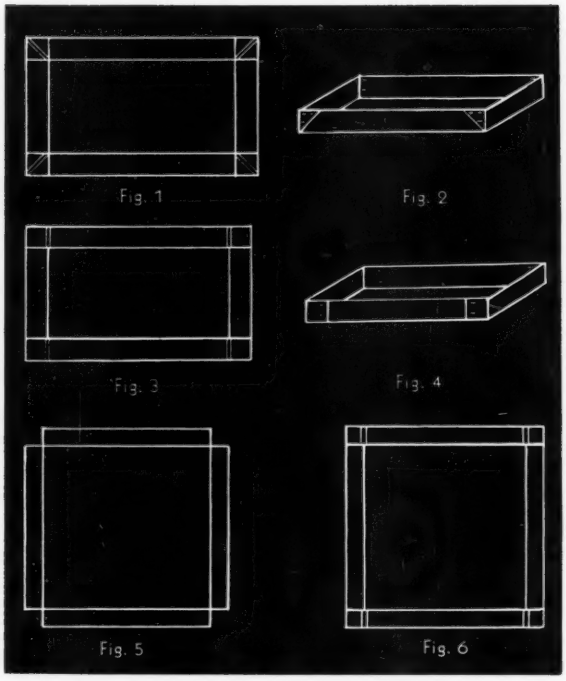

proper parts are installed. The ends of the wire can be cut square or at an angle of 45 deg. as desired. The wire usually employed is of copperized or galvanized steel, .103 in. wide and .017 in. or .020 in. thick. Another type of wire is 0.60 in. wide and .020 in. or .024 in. thick. The number of stitches of average length per pound of wire will run from 1600 to 2500 and the cost from three to five cents per thousand. Stitching wire comes on 10-lb. spoolless coils, an aluminum spool-holder being used in setting it up on the machine. The usual crown length is $^3/_8$ in. or $^7/_{16}$ in., although for certain special purposes longer or shorter crowns are sometimes employed.

The following sections describe the more usual applications of wire stitching in the assembling and sealing of containers as now practiced.

Slotted Containers

Box stitchers are used for stitching the manufacturer's seams of regular slotted containers. This operation can be performed on a standard box stitcher, the work being pushed along the arm as stitched and the finished box afterward withdrawn. The box may also be folded over the arm and stitched as it is being withdrawn toward the operator. There is a slight advantage in making up boxes in this way in that the flange may be more accurately positioned along the adjacent side than when the box is folded on the creases and then stitched. Stitches are placed about $2^1/_2$ in. apart, with tie stitches sometimes used at each end of the seam, although on boxes less than 18 in. in depth the classification permits a maximum spacing of 3 in.

Three-Piece (Bliss) Boxes

One style of three-piece box has the stitching flanges made a part of the body blank and is usually assembled on a box stitcher, a nub being placed over the end of the arm which forms a guide or spacer to bring the stitches at the center of the flange—a panel holder also being furnished for convenience. The operator first pushes the top flap of one end panel into the panel holder, then folds up the body blank into shape and pushes the same over the end panel. By holding the sides firmly in the hand, the end panel is also held in position and the box placed over the stitching arm and the bottom flange attached by means of a single stitch in the center. The three flanges are now stitched, tie stitches usually being placed at the top and bottom of the side flanges for greater rigidity and strength.

Another type of this box has the stitching flanges made a part of the end panels and is assembled on a special double head stitcher with 45-deg. heads. A movable and adjustable work table is placed between the stitcher heads, the edges of the table serving as guides in the assembly of the box. The first step consists in laying the body blank on the table with one top flap bent down in front of the operator, who holds the two end panels in position against the sides of the table so that the stitching flanges overlap the first side of the box in proper position for stitching. One stitch is placed while the table is in its outward position, the table pushed in and the remainder of the stitches placed in order, automatically spaced. The body blank with the ends attached is then moved forward and bent over the end of the table, thus presenting the bottom for stitching. The flanges on the bottom of the ends are folded in place and stitched as before. The third operation is a repetition of the second and this completes the assembly of the container.

Telescope Boxes

The blanks for heavy telescope boxes are received flat by the customer and may be creased twice at each corner, with diagonal slotting, so that the corner flaps fold up in triangular form, either against the ends or the sides of the box as desired. This construction is shown in Fig. 1 and Fig. 2.

The flaps are stitched on a box stitcher in the manner shown, the number of stitches placed depending upon the weight and character of the contents. Sometimes one of the triangular flaps is folded outside of the end and the other inside of the side, both being stitched in place to give added strength. Another method of making up such boxes is to crease and slot the corners so that when assembled, rectangular corner flaps are formed which are folded up against either the end or the side of the box as desired. This construction is shown in Fig. 3 and Fig. 4.

Cracker Caddy Covers

The covers of the familiar cracker caddy are about $10^1/_2$ in. square, with flaps that are from $^3/_4$ in. to 1 in. wide.

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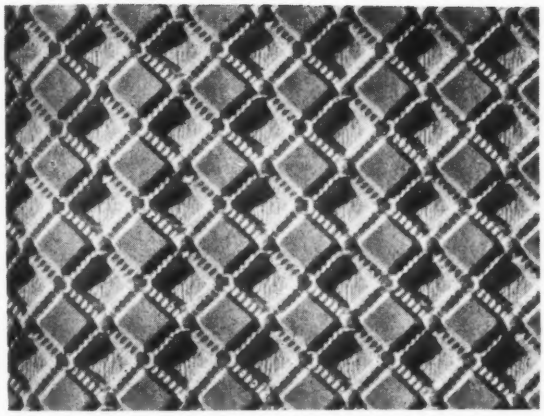

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The flaps may be arranged in two ways, as shown in Fig. 5 and Fig. 6.

When the corners are cut out as in Fig. 5, the covers are stitched on a corner stay machine, using a stitch that has the crown bent at an angle of 90 deg., one leg being clinched in each flap. The driver is cut out in the center at an angle to drive the stitch with a 90-deg. angle crown and a moving clincher mechanism is employed that clinches the staple legs flat against the flaps, which are brought tightly together. The arm of the machine is also shaped with a 90-deg. angle. In practice, the operator sits in front of the machine and stitches the four corners in succession, frequently working at a rate of 15 or more covers per minute. While the usual type of caddy cover is cut out at the corners, the one shown in Fig. 6 is sometimes used.

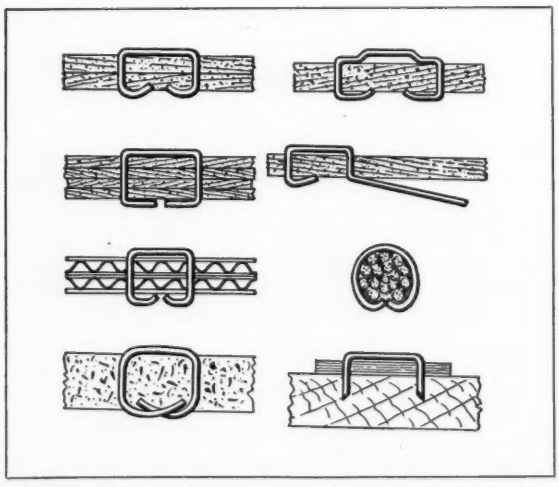
Bag Closing

The tops of filled paper bags are often closed by wire stitching, using standard box stitchers. The top of the bag is either folded over once or a double seal fold may be used and two or more stitches inserted.

The sealing of heavy bags is best done on a machine with a horizontal stitcher head, the stitches being driven horizontally instead of vertically as usual. A table equipped with rolls is placed under the stitcher, or a standard conveyor is used, on which the bags stand with the flaps at the right height for closing.

Bottom Stitching

A bottom stitcher is nothing but a standard box stitcher without the clincher arm, a vertical post being substituted which is mounted on the base casting or frame. The post is $1\frac{1}{2}$ in. to $2\frac{1}{2}$ in. in diameter and the clincher is fitted into the top, which is reduced in area to 1 in. to $1\frac{1}{2}$ in. in diameter. The head of the post is adjustable (up or down) by hand, to accommodate different thicknesses of board and is usually constructed with a heavy spring inside the post, so that if extra heavy work is inserted without proper adjustment, the spring will give and the stitcher head not be damaged by the strain. The post is hinged at the bottom and by depressing a special pedal may be tilted forward to permit easy insertion of the box before stitching.



Illustrated above is the application of wire stitching to various types of work and a showing of some of the different forms of staples available

Duplex head bottom stitchers are also used, a single stitcher head being arranged to drive two stitches at once, with the crowns in line and spaced two and one-half inches apart. A short bar is placed on the top of the bottom post, fitted with two clinchers properly spaced. Double head bottom stitchers have two stitcher heads which may be placed in fixed position (non-adjustable) for repetitive work on one size of box or which may have narrow stitcher heads adjustably mounted.

Bottom Stitching of Slotted Containers

In many industries it has been found good practice to stitch the bottom flaps of slotted containers before they are loaded, the advantage being that the box is thus held firmly in shape, with a secure bottom closure, while the goods are being inserted.

Several conditions of bottom stitching are met with, the more important being described below:

All flaps of case meet in center: This condition is met in all square containers or in center special slotted containers. The box should be held firmly from the two sides so as to hold the box square and avoid any gap between the outer flaps. The stitches should not be over $2\frac{1}{2}$ in. apart and the stitches along the edges of the abutting outer flaps are usually placed close to the edge. Care should be taken that the stitches are tightly clinched so that the inside of the box will be smooth. When stitching corrugated boxes, the container may be held at an angle to the machine, thus allowing stitches to be driven diagonally across the corrugations to give greater holding power.

Outer flaps meet, inner flaps not over 6 in. apart: The same method of stitching is used on slotted cartons which are not square, but in which the inner flaps are not more than six inches apart. No stitches, of course, are placed except where there are two thicknesses of board.

Outer flaps meet, inner flaps over 6 in. apart: Where the inner flaps are over 6 in. apart, the Freight Classification requires that if wire stitching is used, the outer flaps must be overlapped 1 in. or more and attached by wire stitches not over $2\frac{1}{2}$ in. apart.

Outer flaps overlapped: Containers of this construction are much used in the shoe and other industries and when stitched on a single head machine, the center overlap (1 in. or more) is stitched first, the sides of the box being firmly held between the hands of the operator. The stitches are placed across the overlap as the box is most easily held when the seam, or length of the box, is in the direction of the arm of the machine. The stitches on the ends may be placed either in the same direction as those on the seam or at 45 deg. or 90 deg.

Full overlap boxes: Boxes with the bottom flaps fully overlapped are often sealed with glue, but when wire stitched, it is usual to cut down the overlap to 1

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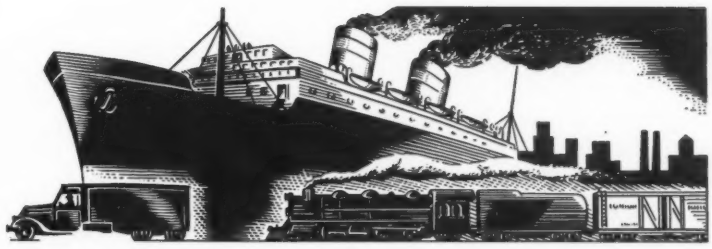

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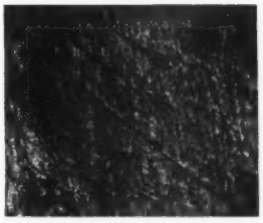
These actual photographs show two pieces of metal after shipment.



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in. in order to save material, except where the case is very long and narrow and extra rigidity is wanted.

Double head bottom stitching: In one method of bottom stitching of boxes, the outer flaps of which meet and the inner flaps meet or are not over 6 in. apart, the heads are set so that one stitch will be driven just inside the end of the box and the other just inside the edge of the opposite inner flap. The ends of the clincher bar form guides for spacing the stitches from the side of the box. The stitches are placed in order, one side being completed first, the box moved over on the post and the other two rows placed. An adjustable table is often fitted around the post to support the projecting top flaps of the box, which helps to hold the bottom flaps in flat position during the stitching operation. A disadvantage of double head stitching is that more stitches must be placed than are required by the Freight Classification. The extra cost of these stitches is, however, usually not of importance compared with the value of the extra speed of the stitching operation.

Duplex head bottom stitching: A duplex head stitcher, driving two stitches at once, spaced $2\frac{1}{2}$ in. on centers, can be used on all boxes, whether the outer flaps meet or overlap; whereas a double head stitcher cannot be used on overlapped flaps, since there is no way of placing the stitches in the center part of the seam. When used on a box with the outer flaps meeting, the center seam is stitched first, one stitch on each side of the joint. By holding the box at an angle to the machine, the stitches may be driven diagonally and thus brought closer to the joint than when placed at right angles. The ends of the box are then stitched, the stitches being placed in order, two at a time.

When stitching a box with center overlap, it is easier to stitch the ends first (since the box can be better held if both ends are equidistant from the body), the center seam being then completed. This can be reversed, however, and the center seam stitched first, but in this case one arm must be extended over the box to hold the opposite side until the first stitches have been driven. Duplex head stitching is not quite as fast as double head stitching since the position of the stitches in the center of the box, or on the overlap, must be judged by the eye (as in the case of single head stitching), although the stitches along the ends may be rapidly driven because the clinching arm forms a guide. It is, however, a method of wider application, since it can be used without any machine adjustment for all sizes of boxes and for all flap constructions and is much faster than single head stitching under average operation.

Top Stitching

A standard top stitcher comprises a box stitcher without the solid clincher arm, in replacement of which a thin steel blade is used with the clincher set in the end. This blade anvil is made of forged steel and is tapered toward the front to make it as thin as possible.

Since the top stitching operation is always conducted on boxes that have been filled and may be of considerable weight, a work table is provided which is fitted with ball bearings on which the box may be easily moved in any direction.

A recent development in top stitching involves the use of a table lifted by means of the motor on the machine. The table lifting mechanism is connected to the motor through a special clutch and a separate double-action foot pedal is used for its control.

Standard top stitchers are much used in the form of combination with a bottom post, the latter being removable while the blade anvil and table can be swung out of the way when the machine is used for bottom stitching. The change can be made in a few minutes.

Metal and Fibre Drums

Drums made of metal, such as sheet steel, aluminum, stainless steel, etc., and of fibreboard have achieved wide adaptation among bulk shippers of powdered and liquid commodities. A very wide range of types and sizes in both the metal and fibre classifications have been developed to meet the specialized needs of varied shippers.

Steel Barrels, Drums and Pails

Metal barrels or drums, used for shipment by rail, must comply with the specifications and requirements of Rule 40 of the Consolidated Freight Classification.

Container capacities vary from the half-gallon pail or can through the standard light shipping drums of 10-, 15-, 30- and 55-gal. capacity to the standard I.C.C. drums of 10-, 15-, 33-, 55- or 110-gal. capacity. Friction-cover light drums and bolter-cover light drums are made in 10-, 15-, 30-, 40-, 50-, 55- and 60-gal. capacities with 9- and 15-in. openings. All types, of course, can be made in special sizes, to order, but the general custom calls for the sizes above mentioned.

Cross References: Fibre-Bodied Containers, page 98; Tin Packages and Cans, page 232; Fibre Can Making Machinery, page 470; Shipping Methods and Considerations, page 512; Corrugated and Solid-Fibre Cases, page 516; Steel Strapping Shipments, page 520.

MORRISON

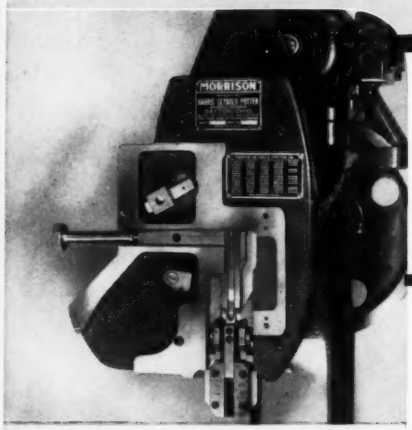
A complete new line of heavy duty stitchers for manufacturing and box work—incorporating a radically different new stitching head. Fourteen outstanding features, representing distinct departures from conventional stitcher design, put this new Morrison years ahead of the field —insure better work and increased production at lower cost.

With New Type-SL Stitching Head

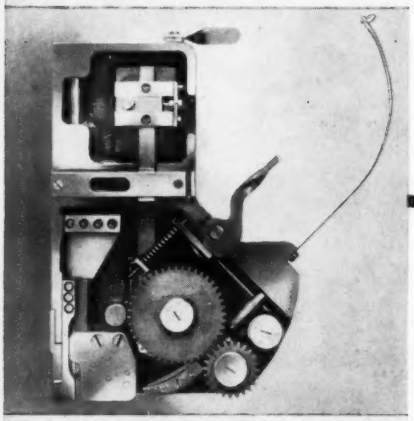
XUM

Here's the New MORRISON

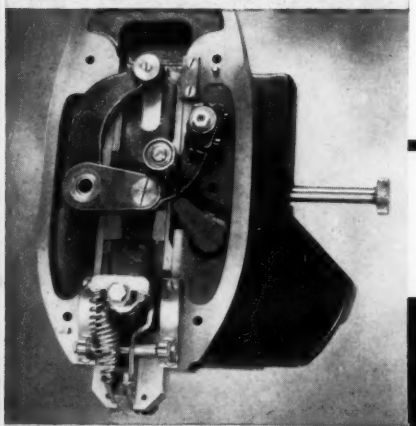
Radical Improvements in Stitcher Design



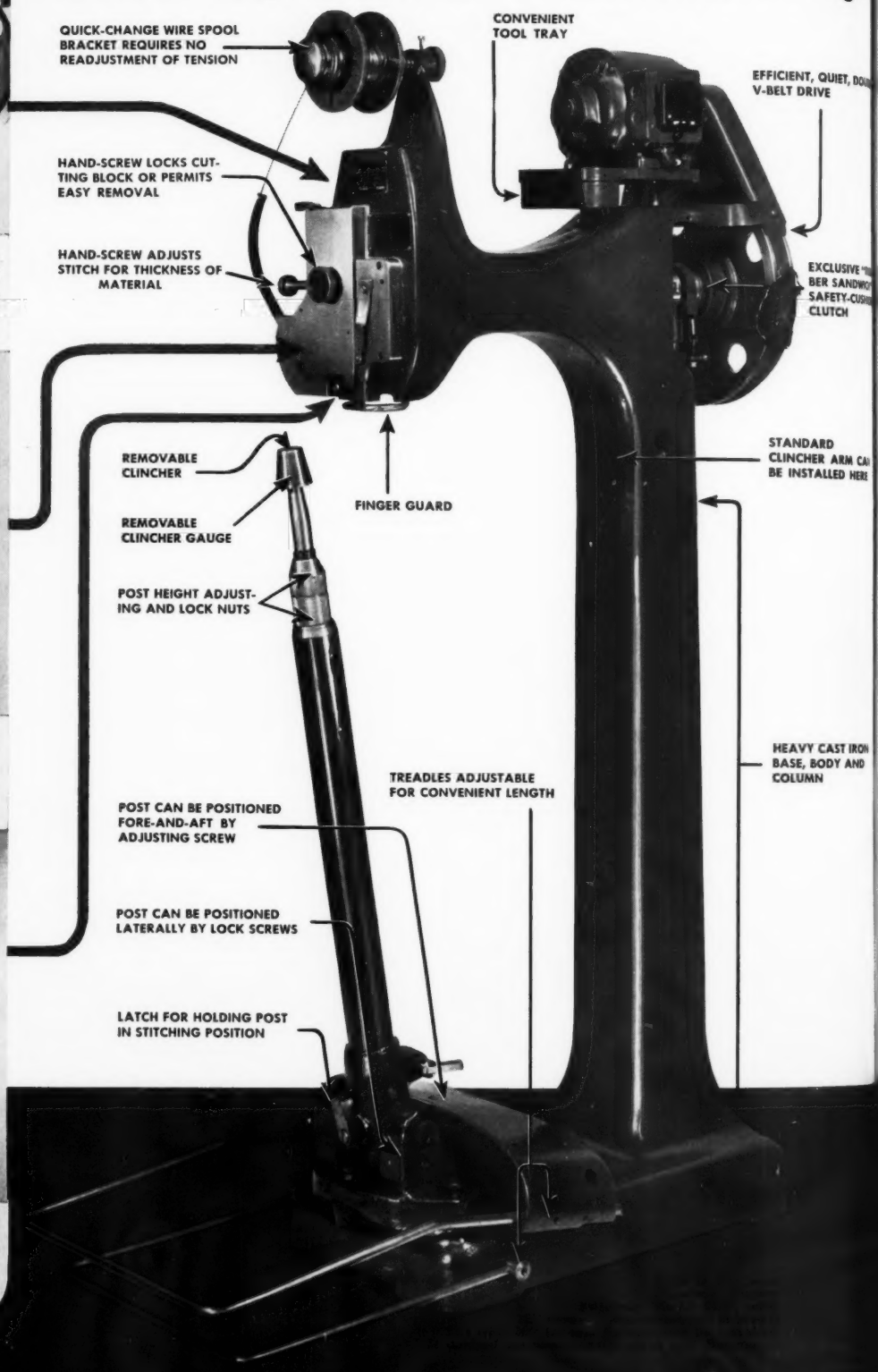
Close up of the Morrison stitching head, with feed and mandrel blocks removed to expose the face plate. Formers and driver are shown here in lowered stitching position. Removal of four socket-head screws frees the face plate and makes all parts immediately accessible.



This rear view of the wire feed block shows its extremely simple design. Block has been removed by loosening one large knurled hand screw. Path of the wire can be traced through the conduit tube (on right), the feed rolls driven by overrunning clutch, the wire straightener, and the cut-off knives.



This rear view of the face plate shows the simplicity of construction and quick accessibility of all working parts. Former slide is raised and lowered by independent rollers actuated by the double profile cam. Two compression springs actuate the shoe (one spring removed to show parts behind it).


QUICK-CHANGE WIRE SPOOL BRACKET REQUIRES NO READJUSTMENT OF TENSION
CONVENIENT TOOL TRAY
EFFICIENT, QUIET, DO
V-BELT DRIVE
HAND-SCREW LOCKS CUTTING BLOCK OR PERMITS EASY REMOVAL
HAND-SCREW ADJUSTS STITCH FOR THICKNESS OF MATERIAL
EXCLUSIVE
BER SANDWI
SAFETY-CUS
CLUTCH
REMOVABLE CLINCHER
REMOVABLE CLINCHER GAUGE
FINGER GUARD
STANDARD CLINCHER ARM CA
BE INSTALLED HERE
POST HEIGHT ADJUSTING AND LOCK NUTS
HEAVY CAST IRON BASE, BODY AND COLUMN
TREADLES ADJUSTABLE FOR CONVENIENT LENGTH
POST CAN BE POSITIONED FORE-AND-AFT BY ADJUSTING SCREW
POST CAN BE POSITIONED LATERALLY BY LOCK SCREWS
LATCH FOR HOLDING POST IN STITCHING POSITION

Model
SLA
SLB
SLC
SLE
SLF
SLG
SLH
SLJ
SLK
SLL
SLM
SLP
SLQ
SLR
SLS

XUM

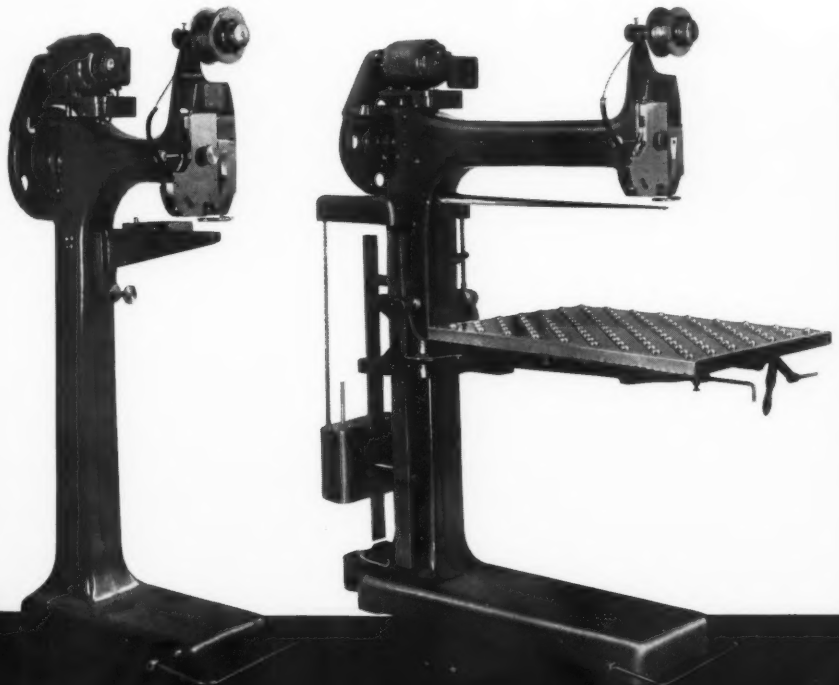
for Every Wire Stitching Job

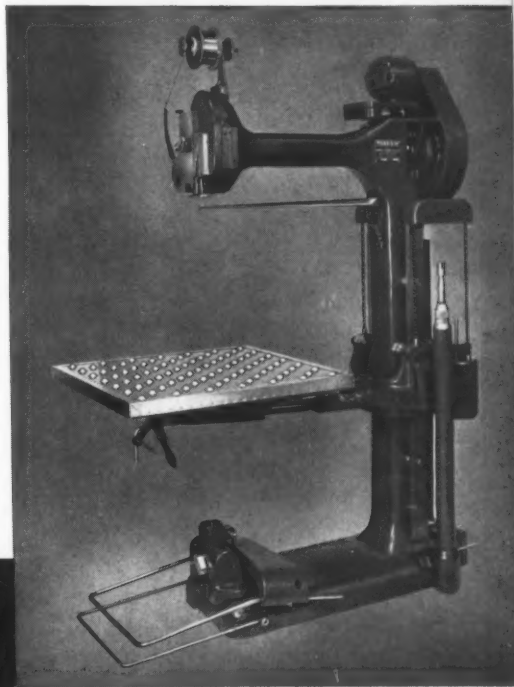
Morrison offers a complete line of heavy duty stitchers for box manufacturers and users, all with the revolutionary new Type-SL head and the exclusive "rubber-sandwich" safety-cushion clutch. Fifteen standard models of bottom stitchers, top sealers, combination units, side seamers and arm machines provide a variety of machine sizes and practical throat depths to meet nearly every industrial need. Seybold engineers and sales representatives are prepared to work with you when necessary in adapting Morrison stitchers to handle your particular types of jobs, or in developing special machines to be built to meet your individual requirements.

SPECIFICATIONS—MORRISON STANDARD STITCHERS

Model	Type of Machine	Actual Throat Depth	Stitch to Floor Distance	Overall Length x Width	Shipping Weights Net	Shipping Weights Crated	Boxed for Export Gross Weight	Boxed for Export Cubic Feet	Code
SLA	15" Arm	15¾"	45"	39 x 17	470	650	750	44	Nibble
SLB	25" Arm	25¾"	45"	49 x 17	550	740	840	65	Nicety
SLC	33" Arm	33¾"	45"	57 x 17	750	960	1080	92	Niche
SLE	25" Side	25¾"	45"	57 x 36	620	820	920	65	Nickel
SLF	33" Side	33¾"	45"	65 x 36	840	1060	1180	92	Niece
SLG	45" Side	45¾"	45"	77 x 36	1100	1400	1560	125	Nightcap
SLH	15" Bottom	15¾"	45"	41 x 19	580	760	860	44	Nimble
SLJ	25" Bottom	25¾"	45"	51 x 19	660	850	950	65	Nimrod
SLK	15" Arm & Bottom	15¾"	45"	41 x 19	600	780	880	44	Ninny
SLL	25" Arm & Bottom	25¾"	45"	51 x 19	680	870	970	65	Nipple
SLM	25" Top	25¾"	53"	55 x 28	1200	1400	1520	95	Nitrate
SLP	33" Top	33¾"	53"	63 x 28	1380	1600	1740	105	Noah
SLQ	25" Combination	25¾"	53"	55 x 28	1295	1495	1650	95	Nocturne
SLR	33" Combination	33¾"	53"	63 x 28	1480	1700	1900	105	Noddy
SLS	Semi-Automatic	See special folder covering this type of machine.							

Model SLQ Morrison Combination top and bottom sealer, with 25" throat. Set up here for bottom sealing with the blade anvil folded down, counterbalanced roller top table folded up and clincher post in position. Model SLR, Combination unit, has 33" throat.





Model SLQ, 25" throat Morrison Combination unit set up for top sealing, with quick-acting counterbalance roller top table down and ready to receive box. Folded top flaps slide over blade anvil arm for stitching. Model SLR has 33" throat.

XUM

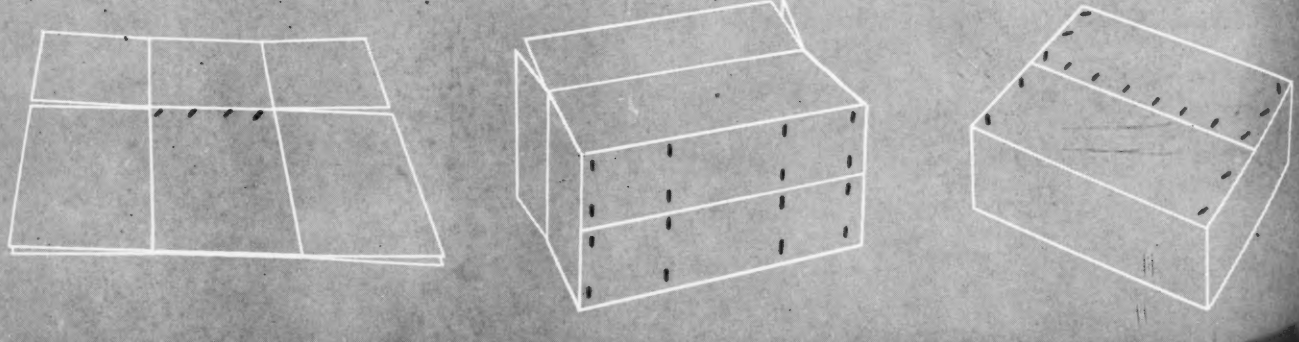
Only Morrison Type-SL Wire Stitchers Have ALL These Desirable Features

1. Speed "tailor-made" for any job. Machines furnished with any one of 15 different speeds, 150 to 500 stitches per minute. 290 or 335 RPM recommended. Specify desired speed on order.
2. Anti-friction bearings at all vital points—cam shaft, connecting links, feed shafts, gears, mandrel, shoe hangers, etc.
3. Special alloy steels used in parts subject to heavy wear and strain.
4. Consumable parts designed for longer life—e.g. double-ended flat knife has eight cutting positions; formers are double ended; formers and driver held in correct position by countersunk socket-head screws.
5. Exclusive rubber-sandwich safety-cushion clutch absorbs shock and increases life of moving parts.
6. Exclusive brake design insures application only at proper moment and prevents over-run.
7. Accessibility of all parts—cutting block and mandrel block each removable in 30 seconds, exposing working mechanism.
8. Positive wire feed mechanism with over-running clutch insures accurate feeding.
9. Simple wire lubrication device eliminates drag as wire feeds through curved passages.
10. Feed block setting provides visible gauge for stock thickness. Turning hand screw adjusts wire draw and automatically equalizes stitch legs.
11. Wire is cut off by upward movement of round die—prevents disturbing the wire in the mandrel after cutting off.
12. Double-profile cam has separate followers for raising and lowering the former slide.
13. Exclusive new-design, free-operating shoe—actuated by ball-bearing cam followers on a hanger and two large compression springs.
14. Standard capacity (thickness of work)—two sheets of paper to $\frac{3}{4}$" maximum. Extra-wide $1\frac{5}{8}$" gap between bottom edge of face plate and work surface increases ease of handling work.

SEYBOLD DIVISION, Harris-Seybold-Potter Co., Dayton, O.

Model SLS Morrison Automatic Side Seamer stitches side seams (or manufacturers' seams) of corrugated or solid fibre containers as fast as the machine operator can fold and feed box blanks. Descriptive literature on request.

Morrison Non-automatic Side seam Stitchers are built either with or without 45" angle head, as preferred. Three sizes available, with 25", 33" and 45" throat depths, are respectively Models SLE, SLF, and SLG.



For the shipment of paints, oils and other liquids, drums are generally supplied with tight heads with $^3/_4$-in., $1^1/_2$-in. or 2-in. threaded openings to accommodate threaded plugs. The openings may be in the top or in the top and side of the drum. For soaps, greases, powders, etc., bolted covers or full removable heads are commonly used. Lighter gauges of metal are used for the smaller sized containers and for containers designed for single-trip duty. Drums of this type are provided with several types of closure, including lug covers, friction covers fastened with clamps and curl-seal covers. Small sized containers, known variously as kits, pails or drums, are widely used for shipping paints, drugs, chemicals, soaps, inks and similar commodities. These are frequently equipped with bails or handles.

Aluminum Drums and Barrels

During the past two years, the development of aluminum alloys has permitted the adaptation of this material for a number of new shipping purposes.

An aluminum carboy of 13-gal. capacity and having a contour similar to that of the conventional glass carboy has been developed. The unit has a flat section provided on the shoulder to make stacking possible. It is fitted with drop handles and screwed caps or ceramic plugs are optional as closures. The container weighs approximately 16 lbs. as against the 65 lbs. of the conventional glass carboy with its wooden protective crate.

Another relatively recent development is the aluminum beer barrel weighing roughly one-third as much as the conventional wooden container of identical capacity and occupying one-third less than the old-time barrel. These barrels consist of two drawn half-sections of heavy gauge aluminum sheet welded together and equipped with

1

2

1. Metal pail equipped with a new type of tight-sealing lever closure. Photo courtesy Wheeling Corrugating Co. **2.** Aluminum alloy drum available in capacities from 10 to 110 gal. **3.** Light gauge aluminum barrel or drum of 55-gal. capacity. **4.** Bilge type welded aluminum alloy container made in 15.5- and 31-gal. capacities. **5.** Thirteen-gallon aluminum carboy. Photos courtesy Aluminum Co. of America.

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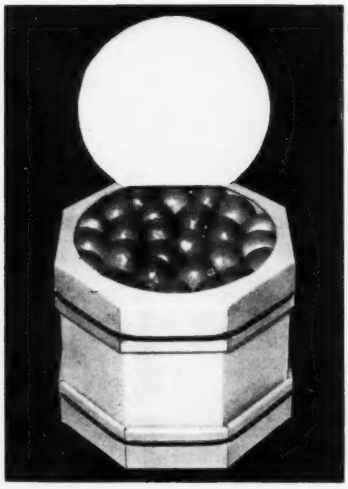

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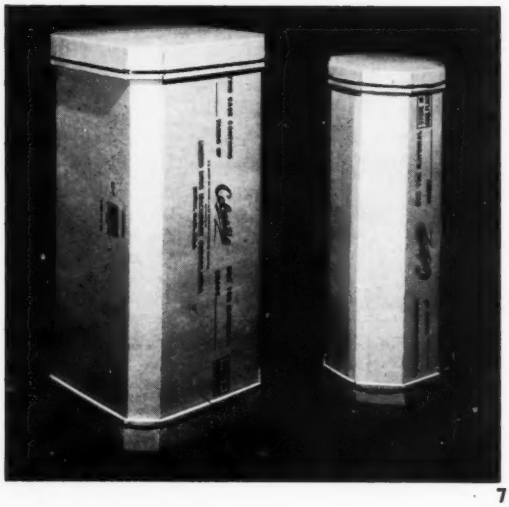

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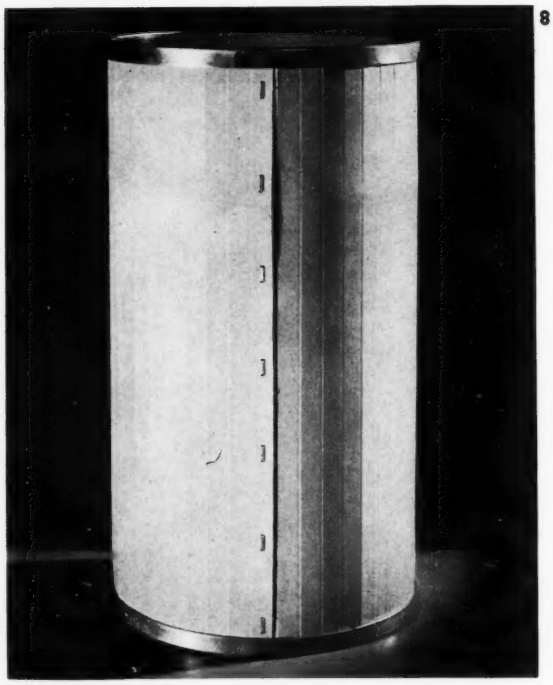
6. Three-piece corrugated drum. Lid and bottom are held to central section by wire straps. **7.** Three-piece corrugated board drum adapted to the shipment of heavy leather goods. Photos courtesy Gaylord Container Corp. **8.** Five-gallon cylindrical fibreboard ice cream bulk shipper. Shipped flat and erected just prior to use. Courtesy National Folding Box Co.



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welded bung and fittings. The container is available in eighth, quarter, half and full barrel sizes.

Both bilge type and straight-side I.C.C. type drums have also been developed in sizes from 15 to 110 gal.

Fibre Drums

Fibre drums were first developed as a cheap substitute for the wooden barrel or the steel drum. They have since been improved in structure to a point where they have achieved wide acceptance among shippers. The full open type, which is characteristic of the fibre drum, has adopted it for use for such widely varied products as dry chemicals, pastes, plastic products and even semi-liquids. For certain products, the complete absence of metal in any form on the inside of the container makes the fibre drum definitely preferable to any other type. When used as single-trip non-returnable containers, fibre drums can be destroyed by burning, providing a substantial convenience for certain users.

Fibre drums are frequently lined with glassine, rubber hydrochloride sheeting or non-ferrous metal foils (aluminum, tin, copper or lead) to achieve a solution of the problems presented by reactive chemicals, hydroscopic materials, etc.

Fibre drums are available in a wide range of sizes from 1 to 60 gal. They are accepted by parcel post and express shipments as well as for freight and export. A number of types of closures have been developed to meet special requirements.

In addition to the standard cylindrical fibre drums, which most closely resemble metal or wooden containers in shape, a number of specialized types have been invented for special purposes. Thus, one container which has achieved wide usage for chemicals, food products, bottle caps, paper and fabric rolls, soap chips, powders and even fresh fruits is formed of a corrugated central section or sleeve which may be square, octangular, hexagonal or of other multi-sided cross section. This sleeve is topped and bottomed with corrugated slip-on covers held tightly in place by steel strapping. The result is a compact, light and easily handled container which can be shipped flat and assembled as needed. Since these drums are formed of flat sheet, they may be printed or decorated on standard corrugated container printing presses. They are available with or without moisture-proofed liners.

Another specialized type is a cylindrical package for bulk ice cream and similar products made in 1-, $1^1/_2$-, $2^1/_2$- and 5-gal. capacities. In the ice cream field, this has—to a large degree—replaced the formerly universal metal ice cream can. It is shipped flat to the ice cream plant and there set up with the aid of a special device. Top and bottom of the container are held in place by an integral metal ring.

Drumpaks have again won Honorable Mention in the All-America Package Competition. This year the awards went to the packages designed to ship box toe material manufactured by the Celastic Corporation, a subsidiary of E. I. Du Pont de Nemours & Co., distributed by United Shoe Machinery Corporation.

MORE SAFETY, ECONOMY AND SALES APPEAL for bulk shipments with the *New Gaylord Drumpak*

If you ship powdered, granular or flaked products, in fact, almost any product now being shipped in boxes or drums, it will pay you to investigate the new Gaylord DRUMPAK. Awarded Honorable Mention in the 1939 All-America Package Competition, the DRUMPAK offers the following advantages:

1. A saving in shipping weight without loss of safety.
2. A compact, light, easily handled container.
3. Reduction in storage space, as DRUMPAKS are shipped flat and assembled as needed.
4. Contents quickly available for pouring or scooping out by cutting top to form hinged lid.
5. Advertising value of a neat, attractively printed container.

The new Gaylord DRUMPAK is a sturdy, corrugated drum (supports over one ton pressure.) Top and bottom held securely by steel bands quickly and easily applied with inexpensive device. Practically siftproof and waterproof. Offers a real opportunity for lowered shipping costs and increased sales. Send coupon now for full details.

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MAIL COUPON FOR COMPLETE DETAILS NOW

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Jersey City, N. J. or St. Louis, Mo.

Gentlemen: Send us complete details of the new Gaylord DRUMPAK at once. We are interested in shipping

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(PRODUCT)

*Name*_____

*Firm*_____

*Address*_____

*City*_____ *State*_____

IDEAL FOR SUCH PRODUCTS AS...

Soap chips and powders, chemicals, sweeping compounds, food products, small plastic parts, bottle caps, electrical supplies, paper or fabric rolls, or other products requiring special protection against rough handling and the elements.

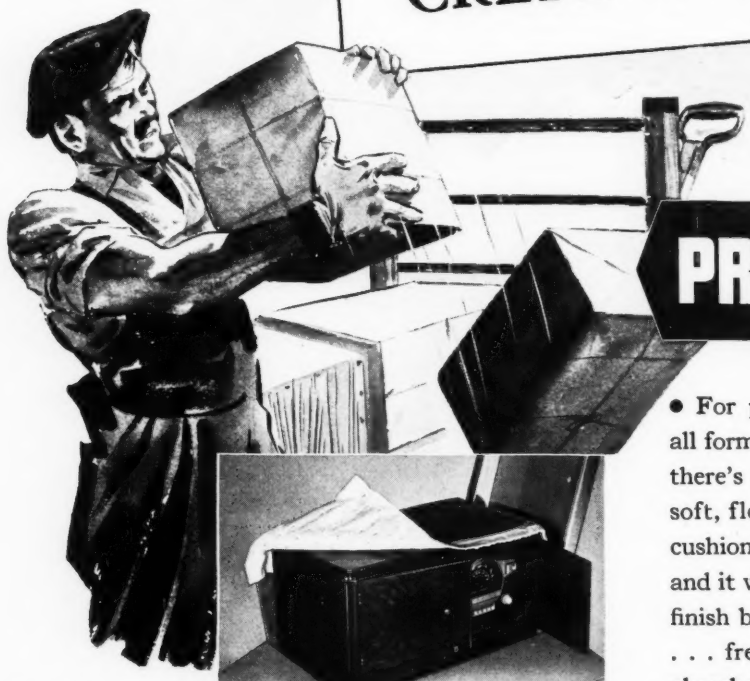
Made in a wide range of shapes and sizes (octagonal, hexagonal, rectangular, square, or square with champered corners) with or without moistureproofed liners.

Gaylord Boxes

XUM

Kimpak
REG. U.S. PAT. OFF. & FOREIGN COUNTRIES

CREPE WADDING ...



PROTECTS YOUR PRODUCT

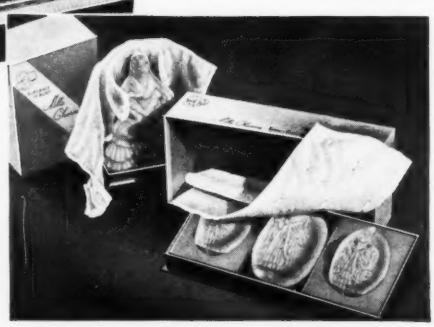
• For protecting your merchandise against all forms of shipping damage you'll find that there's nothing better than KIMPAK*. This soft, flexible, remarkably resilient material cushions the jars and jolts of rough handling and it will not scratch even the most delicate finish because KIMPAK is so pure and clean . . . free from any dirt or grit. It is highly absorbent, too—more than meets postal regulations regarding the shipment of liquids.

KIMPAK comes in rolls, sheets and pads of practically every size and thickness . . . and virtually unlimited variations to solve special packing and packaging problems. So, regardless of what your product is, there is a convenient, economical type of KIMPAK to provide super-protection against breakage, chipping or chafing . . . against costly mars and scratches.

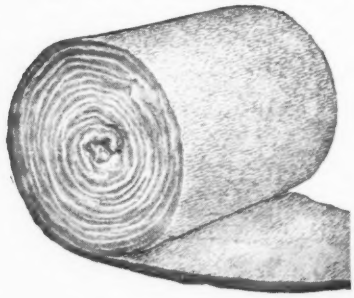
Reg. U. S. Pat. Off. and Foreign Countries

Zenith Radio Corp. relies on KIMPAK to safeguard the beautifully finished cabinet and precision construction of their new 1941 Radio-Phonograph Combination.

Candlecraft Studios protect their candles with 4-ply "Whipcord" Embossed, one of the many KIMPAK specifications.

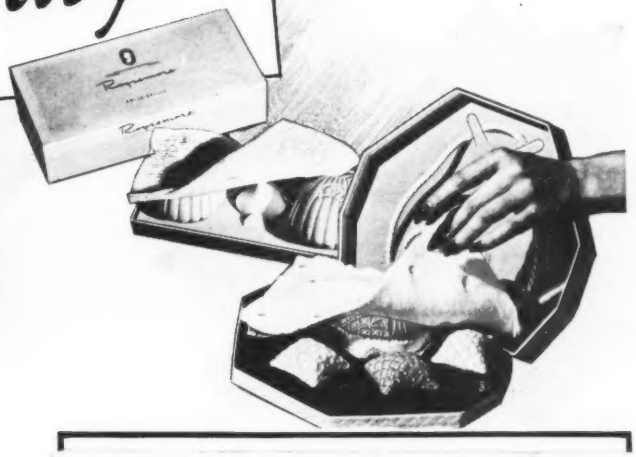


Showing how The House of Gordon, manufacturers of scented toilet soap, uses KIMPAK for protection of its three-bar package of Mlle. Charme—also its one-bar package.



Performs Double Duty

Roycemore Toiletries Inc. uses 10-ply KIMPAK to prevent movement or bruising of their soap and to enhance the beauty of their package.



DRESSES YOUR PACKAGE

• Besides guarding against shipping damages, KIMPAK gives you a plus value with its attention-winning appearance. The snowy whiteness and rich petal-like texture make a quality setting for your product . . . add a note of distinction that increases eye-appeal and stimulates sales.

You'll find, too, that KIMPAK steps up efficiency in the shipping room. There's no fuss, no muss, no waste. It's as easy to use as a piece of string. Saves time, work and money.

Why not see how KIMPAK fills your need! Just mail the coupon below for a FREE portfolio of samples and actual illustrations showing how foremost manufacturers profit by using KIMPAK.

KIMBERLY-CLARK CORPORATION
Neenah, Wisconsin

Sales Offices: 8 S. Michigan Ave., Chicago
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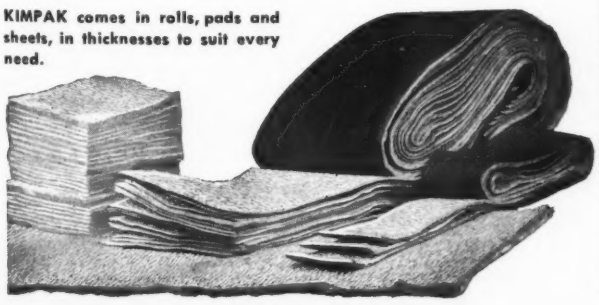
KIMPAK comes in rolls, pads and sheets, in thicknesses to suit every need.



Sample of Z-41 Radio Packing Protection Sheet, available in various colors of pinstriped kraft backing. This is the sheet shown in the accompanying Zenith Radio illustration.

FREE! 1941 Portfolio of KIMPAK!

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Neenah, Wisconsin

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Please send us the 1941 Portfolio of KIMPAK

PC-41

Company .....

Address .....

Attention of ..... *Our Product is* .....

XUM

Protective Paddings and Cushions

Crepe wadding, as the name implies, is a highly resilient, protective packing material. It is available in sheets and rolls, in many thicknesses and sizes, to meet varied needs. It is supplied plain or with various backing papers. By the use of various types of embossing, a wide range of decorative or utilitarian effects is achieved. Both highly absorbent or moisture resistant forms are available, to meet the requirements of certain products.

In some cases, crepe wadding is used as a contact pad in conjunction with rigid interior packing, for facing of corrugated pads or wood bracing members of wooden containers. In other cases, it is applied in sheet form to cover wide areas of finished surface as a cushion protection from direct contact with the walls of corrugated or fibre containers.

Used as a buffer between product finish and side or member of the packing container, cellulose or crepe wadding provides the four essentials of an interior packing protection material:

1. Cushion to equalize the irregularities of the two opposing surfaces, thus tending to eliminate "press marking."
2. Reduction of surface "burning," through absorption within the padding of vibration in transit.
3. Surface smoothness that increases with pressure, thus further reducing hazard of "burning."
4. Conformability to surface which prevents cinders or gritty substances from becoming imbedded between finish and container wall.

The aid of Frank L. Blake of the Kimberly-Clark Corp. in the preparation of this article is gratefully acknowledged.

Cushioning Protection

Because of its inherent resiliency, crepe wadding is used as cushion packing for the shipment of innumerable fragile items—pharmaceuticals, cosmetics, scientific instruments, radio tubes, etc. While the primary reason inducing its use in such instances is the material's cushioning

Cross References: Set-Up Paper Covered Boxes, page 74; Protective Materials—General Considerations, page 177; Bags: Special Types, page 228; Shipping Methods and Considerations, page 512.

1

2

3

1. Blankets of cellulose wadding, with an outer face of paper, provide protection against abrasion and damage against transit shocks for Lionel Trains. **2.** Zenith radio cabinets are preserved by wadding pads from press marking from corrugated walls of shipping containers. **3.** Absorbent, resilient blankets for liquid packages are required nowadays for compliance with parcel post regulations. Photos courtesy Kimberly-Clark Corp.

XUM

WHAT EVERY SHIPPER WANTS TO KNOW . . .

1. *That his product is delivered in good, salable condition.*
2. *That his shipping container is as progressive as his product . . . latest in design and materials . . . and economical.*
3. *That his shipping container creates favorable customer attention.*

Inland engineers with their training and experience will assist you to obtain maximum benefits from your packages. Inland offers this service . . . *without obligation!*

INLAND BOXES

INLAND CONTAINER CORPORATION

SALES OFFICES: INDIANAPOLIS, INDIANA

CHICAGO . . . MILWAUKEE . . . CINCINNATI . . . COLUMBUS . . . MIDDLETOWN, OHIO . . . LIMA, OHIO . . . CANTON, OHIO . . . EVANSVILLE, INDIANA

quality, its fine appearance as a portion of the package and its ability to be tied in with the general package design—by color or by embossing—undoubtedly play a large part in inducing its choice over possible alternative cushioning materials.

Finish Protection

Its extremely soft surface, its laminated crepe structure, which absorbs vibration internally, and its freedom from harsh foreign matter, have made wadding the most favored protection for fine finishes on wood or metal products or packages. Thus, in addition to radio cabinets, refrigerator cabinets and all types of furniture, many fine wooden boxes, polished metal containers and similar reuse packages are shipped with the protection of crepe paddings and cushions.

Parcel Post Shipments

In the shipment of liquids or easily liquefiable materials, the postal regulations are easily complied with when crepe wadding is used, because of the material's high capacity for, and rapid rate of, moisture absorption. Crepe wadding will absorb sixteen times its own weight in moisture. In respect to both parcel post and freight shipments, these materials boast a fine record in the elimination of costly damage claims, due to the combination of their cushioning action (preventing breakages) and their moisture-absorbing action (preventing damage to adjacent products, containers, packages, etc., in the event of breakage).

Crepe wadding, decoratively printed, is here used as a protective pad for an assortment of cosmetic items.

Box top padding is a special form of crepe wadding, available in various thicknesses, paper-backed and ready for use, and is manufactured for box top padding and for other padding purposes.

Crepe wadding lined paper is used as a protective wrapping in the form of bags or cut-to-size sheets. The soft lining absorbs shipping shocks. Anti-tarnish varieties of crepe wadding paper are available, being completely free from sulphur and other tarnishing agents.

Tape Sealing Shipments

Gummed paper tape as a sealer for shipping boxes has many advantages. It is easily and quickly applied and adds considerable strength to the edges and corners of the container, which are the points most needing reinforcement, yet the box sealed by this method is easy to open. Gummed tape, furthermore, provides a certain amount of protection to the contents against dirt, dust, moisture and foreign odors.

Gummed paper sealing tape is usually made of kraft paper gummed with a good grade of animal glue. There is considerable variation in the qualities that may be purchased and the shipper should be certain that he obtains a tape that is strong enough for his purposes. As a rule, the variation in the price asked for any particular weight of gummed tape indicates the difference in quality of the product. The better quality tape not only sticks more quickly, but holds more permanently.

In an effort to standardize the minimum qualities of gummed tape, the Department of Commerce, in cooperation with the gummed tape industry, has developed Simplified Practice Recommendation No. R 114-30 which reduces No. 1 kraft sealing tape to three standard weights —35 lb., 60 lb. and 90 lb. These weights are prior to the gluing operation.

The bursting test is also 35 lb., 60 lb. and 90 lb., respectively. For the 60-lb. case sealing grade, the tearing test is to be at least 118 Elmendorf units in the machine direction and 140 in the cross direction, while the tensile test (one inch wide) is to be 47 lb. in the machine direction and 27 in the cross direction. Standard roll lengths to be 800 ft. on 35 lb., 600 or 1000 on 60 lb. and 375 on 90 lb. Standard package to be 30 in. long (viz. 15 two-

Cross References: Package Sealing Tapes, page 198; Types and Functions of Adhesives, page 474; Shipping Methods and Considerations, page 512; Corrugated and Solid-Fibre Cases, page 516.

XUM

"PACKAGE"

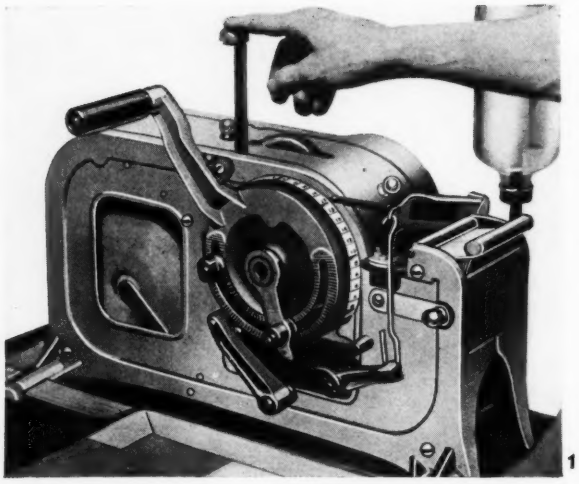
YOUR DELIVERIES *by* WESTERN UNION

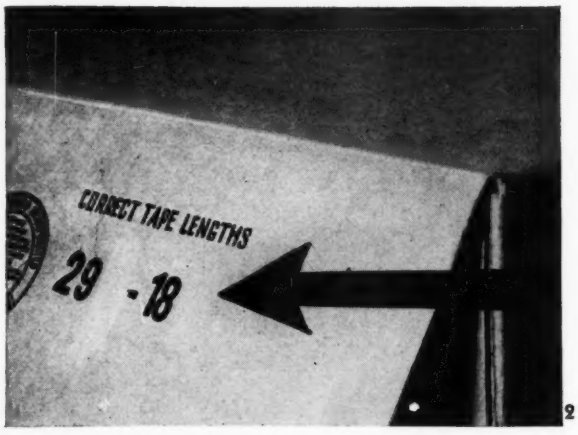
After packaging your product, "package" its delivery. It deserves it. Make that first impression of your product count. Deliver it by Western Union messenger.

Place your sample in the hands of CONSUMERS, DEALERS or the PROFESSIONAL man... by impressive, dependable and economical messenger delivery. In one city or nationwide. Ask the nearest Western Union manager for details.

WESTERN UNION

Distribution Service





1. Repeater sealer for runs of same sized cartons may be set to measure any two strips up to 50 in. in length. Handles tape from 1 in. to 4 in. in width. **2.** Proper tape length indicated on a shipping container.

inch rolls) and 16 standard packages to constitute a standard case.

Application of Tape

The most important point in correct application of gummed tape is to moisten the tape thoroughly. The best results are obtained by the use of a modern mechanical moistening machine. Such machines come in a great many designs, both automatic and "hand-operated." Some can be adjusted to deliver predetermined lengths of tape, cut accurately and moistened. Others include a sample scale enabling the operator to withdraw the correct length each time even though each consecutive piece is desired of a different length. In many machines one pull of the handle moistens the tape, cuts it off and delivers it, the cutting being effected by the return stroke of the handle.

In selecting a moistener from all these models, the following suggestions may be helpful:

(a) Small automatic—measures and cuts a specified length strip in one operation. Adaptable for small package sealing using 35-lb., 500-ft. rolls from $^3/_4$ in. to $1^1/_2$ in. wide with glue outside.

(b) Small hand-pull type—for 35-lb., 800-ft. rolls (glue inside). Tape width $^3/_4$ in. to $1^1/_2$ in. For general package sealing.

(c) Large semi-automatic—for carton sealing and medium sized shipping departments. Ejects a measured strip which is cut off with hand operated knife. Uses 60-lb., 600-ft. rolls from 2 in. to 4 in. in width.

(d) Large automatic. Ejects and cuts measured strips in one operation. Uses 60-lb., 600-ft. rolls 2 in. to 4 in. wide.

(e) Large hand-pull type—a serviceable machine for intermittent use, especially on large packages.

(f) There are also available complicated and expensive machines for special purposes. One of these automatically attaches gummed tape to a packed slotted carton. Another holds, under pressure, the two halves of a full telescope container while a 4-in. wide piece of gummed tape is wrapped all around the four sides of the joint.

When the tape has been moistened, it should be applied smoothly and evenly with its edges equally spaced on each side of the seam or joint. In sealing the flaps of a slotted carton it is better to first fold the outer flaps partly inward. This takes out the spring which otherwise might cause the wet tape to slip. Hold the flaps in place while the tape is setting by placing a weight on them, or even by pressing with the hands while rubbing out any trapped air.

Avoiding Tape Waste

Many shipping departments look on sealing tape as a minor item which costs little or nothing and which can, therefore, be used without regard to expense. Others seem to feel that the more tape used, the safer the outgoing package. A brief consideration of the function of sealing tape should show that the only place where tape is working for you on a fibreboard box is at the seams or joints. Two and a half or three inches overlap down the side simply anchors the tape which is reinforcing the seam above.

If this overlap is properly adhered, another foot of tape won't make this seam any stronger. The top or bottom seam, where the outer flaps meet, should be sealed with a strip lengthwise over this seam. Criss-crossing 2-in. tape over this seam is wasteful as only the 2-in. width *at* the seam is doing any good.

One shipper, sealing only 200 cases a day, saved $435 a year by cutting the overlap back to 3 in. He was easily justified in installing a fixed length moistener.

Another disadvantage of extra long overlaps is that they hide the printing on the box and, moreover, gummed tape does not stick well on printer's ink. In designing printing copy, why not allow 3 in. for the tape, if you seal with tape? This not only leaves the copy visible, but serves to remind the operator to watch his cut-off length.

XUM

DIRECTORIES

Section Sixteen

Pages 545 to 586

BUYERS' DIRECTORY OF THE PACKAGING INDUSTRIES

ALPHABETICAL INDEX OF MANUFACTURERS

TRADE NAME DIRECTORY

ADVERTISERS' INDEX

XUM

BUYERS' DIRECTORY

of the Packaging Industries

ADHESIVES
(Cellulose and Synthetic Resin)

American Products Mfg. Co.
Atlas Gum & Sizing Co.
Atlas Powder Co., Zapon Div.
Atlas Powder Co., Zapon-Brevolite Div.
Bakelite Corp.
Beetle Products Div. of American Cyanamid Co.
Bingham Bros. Co.
Catalin Corp.
Celluloid Corp.
Durez Plastics & Chemicals, Inc.
Eastman Kodak Co.
Fales Chemical Co., Inc., The
Findley Co., The F. G.
Food Packaging Inc.
Goodyear Tire & Rubber Co., The
Gummed Tape & Devices Co.
Maas & Waldstein Co.
Manhattan Paste & Glue Co. Inc.
Midland Glue Products Co.
National Adhesives Division of National Starch Products, Inc.
Plaskon Co., Inc.
Pyroxylin Products Inc.
Sylvania Industrial Corp.
Union Carbide & Carbon Corp.
Union Paste Co.
Williamson Adhesives, Inc.

ADHESIVES
(Gelatine and Glue)

Arabol Mfg. Co., The
Atlas Gum & Sizing Co.
Bingham Bros. Co.
Dennison Mfg. Co.
Ermold Co., Edward
Findley Co., The F. G.
Manhattan Paste & Glue Co. Inc.
Midland Glue Products Co.
National Adhesives Division of National Starch Products, Inc.
Paisley Products, Inc.
Stein, Hall Mfg. Co.
Willard Paste & Glue Co.
Williamson Adhesives, Inc.

ADHESIVES
(Hot Melt)

Arabol Mfg. Co., The
Atlas Gum & Sizing Co.
Bingham Bros. Co.
Dennison Mfg. Co.
Dewey & Almy Chemical Co.
Dispersions Process, Inc.
Findley Co., The F. G.
Manhattan Paste & Glue Co. Inc.
National Adhesives Division of National Starch Products, Inc.
Naugatuck Chemical Div. of U. S. Rubber Co.
Paisley Products, Inc.
Pyroxylin Products Inc.
Union Carbide & Carbon Corp.
Union Paste Co.
Williamson Adhesives, Inc.

ADHESIVES
(Sodium Silicate)

Atlas Gum & Sizing Co.
Bingham Bros. Co.
Findley Co., The F. G.
Manhattan Paste & Glue Co. Inc.
Midland Glue Products Co.
Paisley Products, Inc.
Philadelphia Quartz Co.
Williamson Adhesives, Inc.
Wurzburg Bros.

ADHESIVES
(Starch Derived)

Arabol Mfg. Co., The
Atlas Gum & Sizing Co.
Bingham Bros. Co.
Dewey & Almy Chemical Co.
Ermold Co., Edward
Fales Chemical Co., Inc., The
Findley Co., The F. G.
Manhattan Paste & Glue Co. Inc.
Midland Glue Products Co.
National Adhesives Division of National Starch Products, Inc.
Paisley Products, Inc.
Stein, Hall Mfg. Co.
Union Paste Co.
Willard Paste & Glue Co.
Williamson Adhesives, Inc.

AMPOULES, GLASS

Kimble Glass Co.

APPLICATOR CLOSURES
(Glass, Rod, Brush, Dropper, Swab)

Anchor Cap & Closure Corp.
Anchor Hocking Glass Corp.
Armstrong Cork Co.
Colt's Patent Fire Arms Mfg. Co.
Consolidated Fruit Jar Co.
Double Duty Products, Inc.
Grigoleit Co., The
Kimble Glass Co.
Mack Molding Co.
Mundet Cork Corp. (Closure Div.)
Owens-Illinois Glass Co.
Owens-Illinois Pacific Coast Co.
Pennsylvania Glass Products Co.
Super Seal Container Corp.
Terkelsen Machine Co.
Wurzburg Bros.

APPLICATORS, MEDICINAL
(Separate from Closure)

Armstrong Cork Co.
Celluplastic Corporation
Colt's Patent Fire Arms Mfg. Co.
Kimble Glass Co.
Standard Specialty & Tube Co.
Wirz Inc., A. H.

BAG TIE STEEL

Acme Steel Co.
Betner Co., Benj. C.
Royal & Co., Thomas M.

BAG, ANTI-TARNISH
(Cloth and Cotton-Lined Paper)

Andrews Corp., P. L.
Bemis Bro. Bag Co.
Cottonluxe Mfg. Co.
Eureka Mfg. Co.
Heinrich, Inc., H. H.
Paramount Paper Products Co., Inc.

BAGS, FABRIC

Bemis Bro. Bag Co.
Fulton Bag & Cotton Mills
Heinrich Inc., H. H.

BAGS, FOIL

American Colortype Co.
Bemis Bro. Bag Co.
Betner Co., Benj. C.
Dobeckmun Co., The
Heinrich Inc., H. H.
Milprint, Inc.
Neostyle Inc.
Reynolds Metals Co.
Royal & Co., Thomas M.
Shellmar Products Co.
Union Bag & Paper Corp.
Wurzburg Bros.

BAGS, GLASSINE & WAXED

American Paper Goods Co., The
Andrews Corp., P. L.
Betner Co., Benj. C.
Central Waxed Paper Co.
Comet Envelope & Paper Co. Inc.
Cupples Hesse Envelope & Litho. Co.
Dixie Wax Paper Co., Inc.
Equitable Paper Bag Co., Inc.
Food Packaging Inc.
Heinrich Inc., H. H.
Interstate Folding Box Co., The
Mason Envelope Co.
Milprint, Inc.
Moser Bag & Paper Co., The
Neostyle Inc.
Newark Paraffine & Parchment Paper Co.
Paramount Paper Products Co. Inc.
Royal & Co., Thomas M.
St. Regis Paper Co.
Sweetnam, Inc., Geo. H.
Tower Envelope Co.
Union Bag & Paper Corp.
Wolf Brothers
Wurzburg Bros.
Yorkville Paper Co., Inc.

BAGS, MAILING

Andrews Corp., P. L.
Bemis Bro. Bag Co.
Comet Envelope & Paper Co. Inc.
Cupples Hesse Envelope & Litho. Co.
Fulton Bag & Cotton Mills
Neostyle Inc.
Union Bag & Paper Corp.
Wurzburg Bros.

BAGS, MULTIWALL HEAVY DUTY

Bagpak, Inc.
Bemis Bro. Bag Co.

Betner Co., Benj. C.
Equitable Paper Bag Co., Inc.
George & Sherrard Paper Co.
Heinrich Inc., H. H.
International Paper Products Corp.
St. Regis Paper Co.
Union Bag & Paper Corp.
Wurzburg Bros.

BAGS, PAPER

Bemis Bro. Bag Co.
Betner Co., Benj. C.
Central States Paper & Bag Co.
Equitable Paper Bag Co., Inc.
Gaylord Container Corp.
Heinrich Inc., H. H.
Mason Envelope Co.
Moser Bag & Paper Co., The
Paramount Paper Products Co. Inc.
St. Regis Paper Co.
Sweetnam, Inc., Geo. H.
Union Bag & Paper Corp.
Wolf Brothers
Wurzburg Bros.
Yorkville Paper Co., Inc.

BAGS, PAPER, SHIPPING

Bagpak, Inc.
Bemis Bro. Bag Co.
Betner Co., Benj. C.
Central States Paper & Bag Co.
Cottonluxe Mfg. Co.
Equitable Paper Bag Co., Inc.
Gaylord Container Corp.
George & Sherrard Paper Co.
International Paper Products Corp.
St. Regis Paper Co.
Union Bag & Paper Corp.
Wurzburg Bros.

BAGS, TRANSPARENT
(Plain and Printed)

American Paper Goods Co., The
Andrews Corp., P. L.
Central States Paper & Bag Co.
Comet Envelope & Paper Co. Inc.
Cupples Hesse Envelope & Litho. Co.
Dennison Mfg. Co.
Dobeckmun Co., The
Equitable Paper Bag Co., Inc.
Food Packaging Inc.
Humitube Mfg. Co.
Interstate Folding Box Co., The
Ivers-Lee Co.
Mason Envelope Co.
Menasha Products Co., The
Milprint, Inc.
Munson Bag Co., The
Neostyle Inc.
Newark Paraffine & Parchment Paper Co.
Paramount Paper Products Co. Inc.
Print-A-Tube Co.
Royal & Co., Thomas M.
Shellmar Products Co.
Tower Envelope Co.
Union Bag & Paper Corp.
U. S. Envelope Co.
Wolf Brothers
Wurzburg Bros.
Yorkville Paper Co., Inc.

BOTTLES, ALUMINUM

American Aluminum Ware Co.

BOTTLES, APPLIED COLOR

Anchor Hocking Glass Corp.
Armstrong Cork Co.
Ball Brothers Co.
Buck Glass Co., The
Carr-Lowrey Glass Co.
Hazel-Atlas Glass Co.
Kimble Glass Co.
Owens-Illinois Glass Co.
Owens-Illinois Pacific Coast Co.
Wheaton Co., T. C.

BOTTLES, BEVERAGE

Anchor Hocking Glass Corp.
Armstrong Cork Co.
Ball Brothers Co.
Brockway Glass Co., Inc.
Buck Glass Co., The
Glass Containers, Inc.
Hazel-Atlas Glass Co.
Liberty Glass Co.
Owens-Illinois Glass Co.
Owens-Illinois Pacific Coast Co.
Swindell Brothers, Inc.

BOTTLES, COLORED

Anchor Hocking Glass Corp.
Armstrong Cork Co.
Ball Brothers Co.
Brockway Glass Co, Inc.
Carr-Lowrey Glass Co.
Glass Containers Inc.
Hazel-Atlas Glass Co.
Kimble Glass Co.
Owens-Illinois Glass Co.
Owens-Illinois Pacific Coast Co.
Pennsylvania Glass Products Co.
Swindell Brothers, Inc.
Wheaton Co., T. C.

BOTTLES, FOOD PACKING

Anchor Hocking Glass Corp.
Armstrong Cork Co.
Ball Brothers Co.
Brockway Glass Co., Inc.
Carr-Lowrey Glass Co.
Glass Containers, Inc.
Hazel-Atlas Glass Co.
Owens-Illinois Glass Co.
Owens-Illinois Pacific Coast Co.

BOTTLES, HAND MADE

Anchor Hocking Glass Corp.
Carr-Lowrey Glass Co.
Kimble Glass Co.
Owens-Illinois Pacific Coast Co.
Swindell Brothers, Inc.
Wheaton Co., T. C.

BOTTLES, MILK

American Paper Bottle Co.
Brown & Bailey Co.
Buck Glass Co., The
Liberty Glass Co.
Owens-Illinois Glass Co.
Owens-Illinois Pacific Coast Co.

BOTTLES, PAPER (MILK)

See Containers, Paper (Milk)

BOTTLES, PROPRIETARY & PRESCRIPTION

Anchor Hocking Glass Corp.
Armstrong Cork Co.
Ball Brothers Co.
Brockway Glass Co., Inc.
Buck Glass Co., The
Carr-Lowrey Glass Co.
Glass Containers Inc.
Hazel-Atlas Glass Co.
Kimble Glass Co.
Owens-Illinois Glass Co.
Owens-Illinois Pacific Coast Co.
Pennsylvania Glass Products Co.
Swindell Brothers, Inc.
Wheaton Co., T. C.

BOTTLES, TOILET, PERFUME, COSMETIC

Anchor Hocking Glass Corp.
Carr-Lowrey Glass Co.
Hamilton Co., J. T. & A.
Hazel-Atlas Glass Co.
Maryland Glass Corp.
Owens-Illinois Glass Co.
Swindell Bros. Inc.
Wheaton Co., T. C.
Whitall-Tatum Dept. Armstrong Cork Co., Glass & Closure Div.

BOX BOARD, ASPHALT LINED

Butterfield-Barry Co., Inc., The
Consolidated Paper Co.
Gardner-Richardson Co., The
Jaypaco Corp.
LaBoiteaux Co. Inc., The
Morris Paper Mills
Ohio Boxboard Co., The
Rexford Paper Co.
Salwen Paper Co., Joe

BOX BOARD, CLAY-COATED

American Coating Mills, Inc.
Butterfield-Barry Co., Inc., The
Champion Paper & Fibre Co., The
Container Corp. of America
Gardner-Richardson Co., The
Jaypaco Corp.
LaBoiteaux Co. Inc., The
Lebanon Paper Box Co.
Lowe Paper Co.
Miller Paper Co.
National Folding Box Co.
Paper Affiliates Co. Inc.
Salwen Paper Co., Joe

BOX BOARD, FOLDING

American Box Board Co.
American Coating Mills, Inc.

XUM

Butterfield-Barry Co., Inc., The
Champion Paper & Fibre Co., The
Columbia Box Board Mills, Inc.
Consolidated Paper Co.
Container Corp. of America
Dennison Mfg. Co.
Fort Orange Paper Co.
Gair Co., Inc., Robert
Gardner-Richardson Co., The
Jaypaco Corp.
LaBoiteaux Co. Inc., The
Lawless Bros. Paper Mills, Inc.
Lebanon Paper Box Co.
Lowe Paper Co.
Menasha Products Co., The
Michigan Carton Co.
Morris Paper Mills
National Folding Box Co.
Ohio Boxboard Co., The
Paper Affiliates Co. Inc.
Robertson Paper Box Co. Inc.
Salwen Paper Co., Joe
Sutherland Paper Co.
United Paperboard Co.
Waldorf Paper Products Co.

BOX BOARD, METALLIC-COATED

American Coating Mills, Inc.
Butterfield-Barry Co., Inc., The
Champion Paper & Fibre Co., The
Dennison Mfg. Co.
Jaypaco Corp.
Keller-Dorian Paper Co.
LaBoiteaux Co. Inc., The
Lowe Paper Co.
Matthias Paper Corp.
McLaurin-Jones Co.
Miller Paper Co.
Paper Affiliates Co. Inc.
Salwen Paper Co., Joe

BOX BOARD, MOISTUREPROOF & GREASEPROOF

Grant Paper Box Co.
Menasha Products Co., The, Div. Marathon Paper Mills Co.
Nelson Mfg. Co., B. F.
Sutherland Paper Co.

BOX BOARD, SET-UP

American Coating Mills, Inc.
Butterfield-Barry Co., Inc., The
Champion Paper & Fibre Co., The
Columbia Box Board Mills, Inc.
Container Corp. of America
Gair, Co., Inc., Robert
Gardner-Richardson Co., The
Jaypaco Corp.
LaBoiteaux Co. Inc., The
Lawless Bros. Paper Mills, Inc.
Menasha Products Co., The
Ohio Boxboard Co., The
Salwen Paper Co., Joe
Sutherland Paper Co.
United Paperboard Co.
Waldorf Paper Products Co.

BOX STAYS

Gummed Tape & Devices Co.
Matthias Paper Corp.
McLaurin-Jones Co.
National Metal Edge Box Co.
Rexford Paper Co.
Williams & Co., Chas. W.
Wurzburg Bros.

BOX TOP PADDING

Inland Container Corp.

BOX WRAPS

See Lithographers and Various Paper & Wrapper Headings

BOXES, CORRUGATED & SOLID FIBRE

American Box Board Co.
American Coating Mills, Inc.
Ashtabula Corrugated Box Co., The
Canister Co., The
Consolidated Paper Co.
Container Corp. of America
Continental Container Corp.
Crook Paper Box Co.
Eggerss O'Flying Co.
Federal Container Co.
Fort Wayne Corrugated Paper Co.
Gair Co., Inc., Robert
Gaylord Container Corp.
Hinde & Dauch Paper Co., The
Inland Container Corp.
Keystone Box Co.
Kress Box Co., F. J.
Maryland Container Co.
National Container Corp.
National Metal Edge Box Co.
Ohio Boxboard Co., The
Old Dominion Box Co.
Ottawa River Paper Co., The
Owens-Illinois Glass Co.
Owens-Illinois Pacific Coast Co.
Schmidt Lithograph Co.
Schulz Co., A. Geo.
Waldorf Paper Products Co.
Wurzburg Bros.

BOXES, FANCY WOOD

Arrow Mfg. Co., Inc.
Eureka Mfg. Co., Inc.
Harlich Mfg. Co., Mastercraft Div.
Nicoll & Co.
Peterson Bros.
Pilliod Cabinet Co., The
Smith Co., The S. K.
Warner Brothers Co., The

BOXES, LEATHERETTE

Apex Paper Box Corp.
Arrow Mfg. Co., Inc.
Chaspec Mfg. Co.
Consolidated Box Co., Inc.
Deisroth Co., Inc. W. H.
Ehlbert Products
Farrington Mfg. Co.
Harlich Mfg. Co., Mastercraft Div.
Howell & Co., F. M.
Mason Box Co., The
Neumann Co., The Robert
Old Dominion Box Co.
Pictorial Paper Package Corp.
Pilliod Cabinet Co., The
Schulz Co., A. Geo.
Smith Co., The S. K.
Star Case Co., The
Warner Brothers Co., The

BOXES, MAILING

Apex Paper Box Corp.
Buffinton Co., F. H.
Crook Paper Box Co.
Deisroth Co., Inc. W. H.
Densen-Banner Co.
Eureka Paper Box Corp.
Fox Co., The C. J.
Gardner-Richardson Co., The
Gates Paper Co. Ltd., The
Howell & Co., F. M.
Indianapolis Paper Container Co.
Keystone Box Co.
Kiernan-Hughes Co.
Lindley Box & Paper Co.
Mason Box Co., The
Myers, Inc., J. & P. B.
National Folding Box Co.
National Metal Edge Box Co.
Neumann Co., The Robert
Ohio Boxboard Co., The
Old Dominion Box Co.
Pharmacy Paper Box Co.
Pictorial Paper Package Corp.
Ritchie & Co., W. C.
Schoettle Co., Edwin J.
Schulz Co., A. Geo.
Shoup-Owens Inc.
Shuttleworth Carton Co., Inc.
Sutherland Paper Co.
Texas Paper Box Mfg. Co.
Warner Brothers Co., The
Wurzburg Bros.
Young Co., Everett
Zumbiel Co., C. W.

BOXES, METAL

Advertising Metal Display Co.
Aluminum Co. of America
American Aluminum Ware Co.
American Can Co.
Burdick & Son, Inc.
Clark Co., Inc., Geo. V.
Clark Mfg. Co., J. L.
Crown Can Co., Div. Crown Cork & Seal Co. Inc.
Ellis & Sons, Inc., George D.
Farrington Mfg. Co.
Grammes & Sons, Inc., L. F.
Harlich Mfg. Co., Mastercraft Div.
Hudson Co., The H. L.
Kromex Corp.
Majestic Metal Specialties, Inc.
National Can Corp.
Seymour Products Co., The

BOXES, METAL
(Covered and Lined)

Arrow Mfg. Co., Inc.
Farrington Mfg. Co.
Kromex Corp.
National Can Corp.
Smith Co., The S. K.

BOXES, METAL EDGE

National Metal Edge Box Co.

BOXES, MOLDED PLASTIC

See Molders, Plastic

BOXES, MOLDED PULP

See Containers, Molded Pulp

BOXES, PAPER SET-UP

Alderman Paper Box Corp.
Allvue Container, Inc.
American Colortype Co.
Apex Paper Box Corp.
Bisler, Inc., G. A.
Brown & Bailey Co.
Buffinton Co., F. H.
Burt Co., Inc., F. N.
Cambridge Paper Box Co.
Carter Co., William
Casselman Inc., T. & E.
Consolidated Box Co., Inc.
Container Corp. of America
Crook Paper Box Co.
Deisroth Co., Inc., W. H.
Delta Paper Boxes, Inc.
Dennison Mfg. Co.
Densen-Banner Co.
District of Columbia Paper Mills Inc.
Eggerss O'Flying Co.
Ehlbert Products
Eureka Paper Box Corp.
Fairchild Corp., E. E.
Fleisig Inc., H.
Flower City Specialty Co.
Gardner-Richardson Co.
Gates Paper Co. Ltd., The
Grand Rapids Paper Box Co.
Grant Paper Box Co.
Henry, Ira L.
High Point Paper Box Co., Inc.
Hollywood Paper Box Corp.
Howell & Co., F. M.
Jones Paper Box Co., Jesse
Kalamazoo Paper Box Co.
Keystone Box Co.
Kiernan-Hughes Co.
Lebanon Paper Box Co.
Lorscheider-Schang Co., Inc., The
Maryland Paper Box Co.
Mason Box Co., The
Menasha Products Co., The
Michigan Carton Co.
Miller Co. Inc., Walter P.
National Folding Box Co.
National Metal Edge Box Co.
Neumann Co., The Robert
Newark Paper Box Co.
Old Dominion Box Co.
Paper Package Co.
Pharmacy Paper Box Co.
Pictorial Paper Package Corp.
Randolph Paper Box Co.
Ritchie & Co., W. C.
Rowell Co., Inc., E. N.
Sample-Durick Co.
Scandore Paper Box Co. Inc.
Schleicher Paper Box, F. J.
Schoettle Co., Edwin J.
Schulz Co., A. Geo.
Scott & McDonald Inc.
Seaman Box Co. Inc.
Shoup-Owens Inc.
Simplex Paper Box Corp.
Taylor Box Co.
Texas Paper Box Mfg. Co.
United Paperboard Co.
Voss Corp., Karl
Wallace Paper Box Corp.
Warner Brothers Co., The
Waterbury Paper Box Co., The
Wilkens Paper Box Co., Inc.
Wurzburg Bros.
Young Co., Everett
Zumbiel Co., C. W.

BOXES, RIGID TRANSPARENT

See Transparent Materials (Converters, Fabricators and Printers)

BOXES, WINDOW

See Boxes & Cartons, Paper Set-Up

CADDIES, CRACKER

Ace Carton Corp.
American Can Co.
Consolidated Paper Co.
Crook Paper Box Co.
Densen-Banner Co.
Gair Co., Inc., Robert
Gardner-Richardson Co., The
Gaylord Container Corp.
Hinde & Dauch Paper Co., The
Inland Container Corp.
Interstate Folding Box Co., The
Morris Paper Mills
Schoettle Co., Edwin J.
Schulz Co., A. Geo.
Texas Paper Box Mfg. Co.
Transparent Specialties Mfg. Co.
Waldorf Paper Products Co.

CAN SEALING COMPOUNDS

Ams Machine Co., The Max
Dewey & Almy Chemical Co.
Union Carbide & Carbon Corp.

CANS, FIBRE

American Can Co.
Cambridge Paper Box Co.
Canister Co., The
Cin-Made Corp., The
Cleveland Container Co., The
Continental Can Co.
Gardner-Richardson Co., The
Gates Paper Co. Ltd., The
Indianapolis Paper Container Co.
Menasha Products Co., The, Div. Marathon Paper Mills Co.
Pictorial Paper Package Corp.
R. C. Can Co.
Ritchie & Co., W. C.
Sefton Fibre Can Co.
Shoup-Owens Inc.
Sutherland Paper Co.
Waldorf Paper Products Co.
Wurzburg Bros.

CANS, METAL

Aluminum Co. of America
American Aluminum Ware Co.
American Can Co.
Burdick & Son, Inc.
Clark Co., Inc., Geo. V.
Clark Mfg. Co., J. L.
Continental Can Co.
Crown Can Co., Div. Crown Cork & Seal Co. Inc.
Ellis & Sons, Inc., George D.
Hudson Co., The H. L.
National Can Corp.
Owens-Illinois Can Co.
Phoenix Metal Cap Co.
Seymour Products Co., The
Victor Metal Products Corp.
Wheeling Corrugating Co.
Wurzburg Bros.

CANS, METAL
(Cellulose Window)

Clark Co., Inc., Geo. V.

CANS, PAPER
(For Bulk Ice Cream)

Morris Paper Mills
National Folding Box Co.

CAPSULES, CELLULOSE

Armstrong Cork Co.
Celluplastic Corporation
Lusteroid Container Co., Inc.

CARDBOARD

See Box Board

CARTONS, EGG

Container Corp. of America
Fibreboard Products Inc.
Fleming & Sons Inc.
Gair Co. Inc., Robert
Interstate Folding Box Co., The
Schmidt & Ault Paper Co.
Stevens & Thompson Paper Co.

CARTONS, FOLDING & DISPLAY

Ace Carton Corp.
Addison Lithographing Company
Alderman Paper Box Corp.
American Box Board Co.
American Coating Mills, Inc.
Andrews Corp., P. L.

XUM

Badger Merchandising Displays, Inc.
Bloomer Bros. Co.
Blum Folding Paper Box Co., Inc., The
Brooks Bank Note Co.
Brown & Bailey Co.
Burt Co., Inc., F. N.
Consolidated Box Co., Inc.
Consolidated Paper Co.
Container Corp. of America
Densen-Banner Co.
Eggerss O'Flying Co.
Fairchild Corp., E. E.
Fitzhugh, Inc., Wm. W.
Forbes Lithograph Co., The
Fort Orange Paper Co.
Fox Co., The C. J.
Gair Co., Inc., Robert
Gardner-Richardson Co., The
Gaylord Container Corp.
Grand-City Container Corp.
Grant Paper Box Co.
Guilford Folding Box Co., The
High Point Paper Box Co., Inc.
Hollywood Paper Box Corp.
Howell & Co., F. M.
Indianapolis Paper Container Co.
International Folding Paper Box Co.. Inc.
Interstate Folding Box Co., The
Kindred, MacLean & Co. Inc.
Lebanon Paper Box Co.
Lindley Box & Paper Co.
Maryland Paper Box Co.
Michigan Carton Co.
Milprint, Inc.
Morris Paper Mills
Myers, Inc., J. & P. B.
National Folding Box Co.
National Metal Edge Box Co.
Neumann Co., The Robert
Nevins-Church Press, The
New England Collapsible Tube Co.
Ohio Boxboard Co., The
Old Dominion Box Co.
Paper Package Co.
Pictorial Paper Package Corp.
Randolph Paper Box Co.
Reynolds Metals Co.
Richardson Taylor-Globe Corp.
Robertson Paper Box Co. Inc.
Rossotti Lithographing Co.
Sample-Durick Co.
Scandore Paper Box Co. Inc.
Schmidt Lithograph Co.
Schoettle Co., Edwin J.
Schulz Co., A. Geo.
Self-Locking Carton Co.
Shellmar Products Co.
Shuttleworth Carton Co., Inc.
Simplex Paper Box Corp.
Stecher-Traung Lithograph Corp.
Superior Folding Box Co.
Sutherland Paper Co.
Texas Paper Box Mfg. Co.
Trenton Folding Box Co.
United Paperboard Co.
United States Printing & Lithograph Co., The
Waldorf Paper Products Co.
Warner Brothers Co., The
Wurzburg Bros.
Zumbiel Co., C. W.

CARTONS, ICE CREAM

Bloomer Bros. Co.
Container Corp. of America
Menasha Products Co., The, Div. Marathon Paper Mills
Sutherland Paper Co.

CARTONS, PARAFFINED

American Box Board Co.
Bloomer Bros. Co.
Brooks Bank Note Co.
Brown & Bailey Co.
Consolidated Paper Co.
Container Corp. of America
Densen-Banner Co.
Fort Orange Paper Co.
Fox Co., The C. J.
Gair Co., Inc., Robert
Gardner-Richardson Co., The
Gates Paper Co. Ltd., The
Gaylord Container Corp.
Grant Paper Box Co.
High Point Paper Box Co., Inc.
Hollywood Paper Box Corp.
Interstate Folding Box Co., The
Menasha Products Co., The
Michigan Carton Co.
Morris Paper Mills
Ohio Boxboard Co., The
Old Dominion Box Co.
Richardson Taylor-Globe Corp.
Robertson Paper Box Co. Inc.
Schmidt Lithograph Co.
Schoettle Co., Edwin J.
Schulz Co., A. Geo.
Shuttleworth Carton Co., Inc.
Sutherland Paper Co.
United Paperboard Co.
Waldorf Paper Products Co.
Warner Brothers Co., The
Wurzburg Bros.
Zumbiel Co., C. W.

CARTONS, WINDOW

See Cartons, Folding & Display

CASES SAMPLE

Apex Paper Box Corp.
Arrow Mfg. Co., Inc.
Cambridge Paper Box Co.
Farrington Mfg. Co.
Fleisig Inc., H.
Schulz Co., A. Geo.
Star Case Co., The
Warner Brothers Co., The
Wurzburg Bros.

CAST RESIN PLASTICS

See Plastic Materials (Cast Phenol)

CELLOPHANE

See Transparent Materials (Cellophane)

CHIPBOARD

American Box Board Co.
American Coating Mills, Inc.
Columbia Box Board Mills, Inc.
Consolidated Paper Co.
Container Corp. of America
Gair Co., Inc., Robert
Gardner-Richardson Co., The
Inland Container Corp.
Jaypaco Corp.
LaBoiteaux Co. Inc., The
Lawless Bros. Paper Mills, Inc.
Morris Paper Mills
National Folding Box Co.
Ohio Boxboard Co., The
Robertson Paper Box Co. Inc.
Salwen Paper Co., Joe
Schmidt & Ault Paper Co.
United Paperboard Co.
Waldorf Paper Products Co.

CLOSURE LINERS

Aluminum Co. of America
Anchor Cap & Closure Corp.
Anchor Hocking Glass Corp.
Armstrong Cork Co.
Bond Mfg. Corp., Inc.
Dewey & Almy Chemical Co.
Goodyear Tire & Rubber Co. The
Interstate Folding Box Co., The
Johnston Tin Foil & Metal Co., The
LaBoiteaux Co. Inc., The
Mundet Cork Corp. (Closure Div.)
Owens-Illinois Pacific Coast Co.
Reynolds Metals Co.
Shellmar Products Co.
Union Carbide & Carbon Corp.

CLOSURE SEALING COMPOUNDS

Ams Machine Co., The Max
Dewey & Almy Chemical Co.
Pyroxylin Products Inc.

CLOSURES, APPLICATOR

See Applicator Closures

CLOSURES, CORK

See Corks

CLOSURES, CROWN

Armstrong Cork Co.
Bernardin Bottle Cap Co., Inc.
Bond Mfg. Corp., Inc.
Continental Can Co.
Crown Cork & Seal Co., The
Gutmann & Co., Ferdinand
Mundet Cork Corp. (Closure Division)

CLOSURES, METAL

Aluminum Seal Co.
Anchor Cap & Closure Corp.
Anchor Hocking Glass Corp.
Aridor Co., The
Armstrong Cork Co.
Bernardin Bottle Cap Co., Inc.
Chase Brass & Copper Co., Inc.
Clark Mfg. Co., J. L.
Consolidated Fruit Jar Co.

Crown Cork & Seal Co., The
Ellis & Sons, Inc., George D.
Empire Metal Cap Co. Inc.
Federal Tool Corp.
Hazel-Atlas Glass Co.
Lev-A-Lift Co., The
Mundet Cork Corp. (Closure Div.)
National Can Corp.
National Seal Corp.
Owens-Illinois Glass Co.
Owens-Illinois Pacific Coast Co.
Phoenix Metal Cap Co.
Standard Specialty & Tube Co.
White Metal Mfg. Co.
Wirz Inc., A. H.
Wurzburg Bros.

CLOSURES, METAL
(Tamper-Proof)

Aluminum Seal Co.
Anchor Cap & Closure Corp.
Anchor Hocking Glass Corp.
Guardian Safety Seal Co.
Gutmann & Co., Ferdinand
Na-Mac Products Corp.
National Seal Corp.
No-Kap Closures (U.S.A.) Inc.
Williams Sealing Corp.

CLOSURES, MOLDED PLASTIC

American Insulator Corp.
American Molding Co.
Anchor Cap & Closure Corp.
Anchor Hocking Glass Corp.
Armstrong Cork Co.
Boonton Molding Co.
Bridgeport Moulded Prod. Inc.
Carlson Autopress Corp.
Colt's Patent Fire Arms Mfg. Co.
Davies Molding Co., Harry
Eclipse Moulded Products Co.
Federal Tool Corp.
General Electric Co., Plastics Dept.
Grigoleit Co., The
Kurz-Kasch Inc.
Mack Molding Co.
Molded Insulation Co.
Mundet Cork Corp. (Closure Div.)
National Plastics, Inc.
No-Kap Closures (U.S.A.) Inc.
Owens-Illinois Glass Co.
Owens-Illinois Pacific Coast Co.
Phoenix Metal Cap Co.
Plastic & Die Cast Prod. Corp.
Plastics Inc.
Standard Products Co., The, Thermo-Plastics Div.
Terkelsen Machine Co.
Van Norman Molding Co.
Victor Metal Products Corp.
Waterbury Button Co., The

CLOSURES, PAPER

Bemis Bro. Bag Co.
St. Regis Paper Co.

CLOSURES, RUBBER

See Stoppers

CLOSURES, SECONDARY
(Foil)

Aluminum Seal Co.
Reynolds Metals Co.

CLOSURES, SECONDARY
(Viscose)

du Pont de Nemours & Co., Inc., E. I.
Sylvania Industrial Corp.

CLOSURES, SECONDARY
(Other Materials)

Armstrong Cork Co.
Gutmann & Co., Ferdinand

CLOSURES FOR VACUUM SEALING

Aluminum Seal Co.
Anchor Cap & Closure Corp.
Anchor Hocking Glass Corp.
Aridor Co., The
Bernardin Bottle Cap Co., Inc.
Crown Cork & Seal Co., The
Guardian Safety Seal Co.
Gutmann & Co., Ferdinand
Hazel-Atlas Glass Co.
National Seal Corp.
Owens-Illinois Glass Co.
Owens-Illinois Pacific Coast Co.
Phoenix Metal Cap Co.
Super Seal Container Corp.
White Cap Co.
Williams Sealing Corp.
Wurzburg Bros.

COATINGS, PROTECTIVE

See Lacquers & Varnishes

COMPACTS, FANCY METAL

Chase Brass & Copper Co., Inc.
Grammes & Sons, Inc., L. F.
Majestic Metal Specialties, Inc.

COMPACTS, PLASTIC

See Molders, Plastic

CONTAINERS, MOLDED PULP

American Lace Paper Co.
Chaspec Mfg. Co.
Holed-Tite Packing Corp.
Keyes Fibre Co.
Pulp Reproduction Co.
Read, Inc., Robert E.
Self-Locking Carton Co.

CONTAINERS, PAPER
(Liquid-holding)

American Can Co.
American Lace Paper Co.
Betner Co., Benj. C.
Dixie-Vortex Co.
Gair Co., Inc., Robert
Gardner-Richardson Co., The
Interstate Folding Box Co., The
Lily-Tulip Cup Corp.
Mono Service Co.
Schoettle Co., Edwin J.
Sutherland Paper Co.
Sweetnam, Inc., Geo. H.
Wurzburg Bros.
Yorkville Paper Co., Inc.

CONTAINERS, PAPER
(Milk)

American Can Co.
American Paper Bottle Co.
American Sealcone Corp.
Brown & Bailey Co.
Ex-Cell-O Corp.
Fibreboard Products Inc.
Gair Co. Inc., Robert
Gardner-Richardson Co., The
Menasha Products Co., The, Div. Marathon Paper Mills Co.
Purity Paper Vessels Co.
Reed Container Co. Inc.
Single-Service Containers Inc.

CONTAINERS, PAPER
(Nesting)

American Lace Paper Co.
American Paper Goods Co., The
Bloomer Bros. Co.
Container Corp. of America
Densen-Banner Co.
Dixie-Vortex Co.
Fleisig Inc., H.
Lily-Tulip Cup Corp.
Menasha Products Co., The, Div. Marathon Paper Mills Co.
Mono Service Co.
Old Dominion Box Co.
Randolph Paper Box Co.
Schoettle Co., Edwin J.
Schulz Co., A. Geo.
Sutherland Paper Co.
Warner Bros Co., The
Yorkville Paper Co., Inc.

CONTAINERS, SHIPPING

See Boxes, Corrugated & Solid Fibre

CONVEYORS

Alvey-Ferguson Co., The
Chain Belt Co.
Consolidated Packaging Machinery Corp.
Container Equipment Corp.
Crown Cork & Seal Co., The
Horix Manufacturing Co.
Hulbert Engineering Corp.
Jeffrey Mfg. Co., The
Kiefer Machine Co., The Karl
Lamson Corp.
Link-Belt Co.
Logan Co.
Mathews Conveyer Co.
McGuire, Walter
Triangle Package Machinery Co.
U. S. Automatic Box Machinery Co. Inc.

XUM

U. S. Bottlers Machinery Co.
Weigh Right Automatic Scale Co.

CONVEYORS, PORTABLE

Alvey-Ferguson Co., The
Container Equipment Corp.
Food Machinery Corp., Sprague-Sells Div.
Hulbert Engineering Corp.
Jeffrey Mfg. Co., The
Lamson Corp.
Link-Belt Co.
Mathews Conveyer Co.
Paslode Co.
U. S. Bottlers Machinery Co.
Weigh Right Automatic Scale Co.

CORD, CELLULOSE

Dennison Mfg. Co.
Fibre Cord Co.
Sylvania Industrial Corp.
Wurzburg Bros.
Yorkville Paper Co., Inc.

CORK SHEETS
(Paper-backed)

Bond Mfg. Corp., Inc.
Mundet Cork Corp. (Closure Div.)

CORKS

Armstrong Cork Co.
Mundet Cork Corp. (Closure Div.)
Wurzburg Bros.

CORKS, ALUMINUM TOP

Armstrong Cork Co.
Consolidated Fruit Jar Co.
Mundet Cork Corp. (Closure Div.)

CORKS, MOLDED TOP

Armstrong Cork Co.
Davies Molding Co., Harry
Mack Molding Co.
Mundet Cork Corp. (Closure Div.)
Waterbury Button Co., The
Wurzburg Bros.

CORKS, WOOD TOP

Armstrong Cork Co.
Mundet Cork Corp. (Closure Div.)
Wurzburg Bros.

DECALCOMANIA

Dennison Mfg. Co.
Dobeckmun Co., The
Foxon Co., The
Howell & Co., F. M.
Meyercord Co.
Palm, Fechteler & Co.
Wurzburg Bros.

DESIGNERS

See Package Design Consultants (Independent Organizations)

DIES, PAPER CUTTING

Ferguson Co., J. L.
Helmold & Bro., Inc., J. F.
Inman Mfg. Co., Inc.
Randolph Paper Box Co.

DISPENSERS, PUMP

See Sprayers

DISPLAY, MOTION, MECHANISMS

Bronzart Metals Co.
DeNina, James Andrew
Diamond Press Inc., The, Display-Rite Div.
Displayers, The
Motion Displays, Inc.
Stensgaard & Associates, W. L.

DISPLAY MOUNTING & FINISHING

Arvey Corp.
Badger Merchandising Displays, Inc.
Chaspec Mfg. Co.
Display Finishing Co. Inc.
Lithographers' Finishing Co., Inc.
Merit Display Card Co.
Schmidt Lithograph Co.
Schoettle Co., Edwin J.
Zumbiel Co., C. W.

DISPLAYS, COUNTER

Ace Carton Corp.
Addison Lithographing Co.
Advertising Metal Display Co.
American Insulator Corp.
Arrow Mfg. Co., Inc.
Arvey Corp.
Badger Merchandising Displays, Inc.
Blum Folding Paper Box Co., Inc., The
Bronzart Metals Co.
Brooks Bank Note Co.
Burt Co., Inc., F. N.
Calvert Lithographing Co.
Casselman Inc., T. & E.
Central States Paper & Bag Co.
Chaspec Mfg. Co.
Clark Co., Inc., Geo. V.
Consolidated Box Co., Inc.
Container Corp. of America
DeNina, James Andrew
Densen-Banner Co.
Diamond Press Inc., The, Display-Rite Div.
Displayers, The
Edwards & Deutsch Lithographing Co.
Fairchild Corp., E. E.
Fitzhugh, Inc., Wm. W.
Forbes Lithograph Co., The
Fox Co., The C. J.
Foxon Co., The
Gair, Co., Inc., Robert
Gaylord Container Corp.
Gray Wire Specialty Co., The
High Point Paper Box Co., Inc.
Howell & Co., F. M.
Interstate Folding Box Co., The
Interstate Litho. Corp.
Kaumagraph Co.
Kay Displays, Inc.
Kayton Displays, Inc., Robert
Keystone Box Co.
Kindred, MacLean & Co. Inc.
Magill-Weinsheimer Co.
McCandlish Lithograph Corp.
Merit Display Card Co.
Milprint, Inc.
Myers, Inc., J. & P. B.
Nalco Inc.
National Folding Box Co.
National Printing & Engraving Co.
National Process Co., Inc., The
Nevins-Church Press, The
Nicoll & Co.
Ohio Boxboard Co., The
Ottawa River Paper Co., The
Phenix Associates
Pictorial Paper Package Corp.
Pilliod Cabinet Co., The
Randolph Paper Box Co.
Reyburn Mfg. Co., Inc., The
Reynolds Metals Co.
Robertson Paper Box Co. Inc.
Rode & Brand
Scandore Paper Box Co. Inc.
Schmidt Lithograph Co.
Schoettle Co., Edwin J.
Stecher-Traung Lithograph Corp.
Stensgaard & Associates, W. L.
Strobridge Lithographing Co., The
Superior Folding Box Co.
Transparent Specialties Mfg. Co.
Union Steel Products Co.
United States Printing & Lithograph Co., The
Waldorf Paper Products Co.
Warner Brothers Co., The
Wurzburg Bros.
Zipprodt, Inc.

DISPLAYS, COUNTER
(Of Glass and Wood)

Arrow Mfg. Co., Inc.
Bronzart Metals Co.
Chaspec Mfg. Co.
DeNina, James Andrew
Diamond Press Inc., The, Display-Rite Div.
Displayers, The
Gutterson & Co., Inc.
Kay Displays, Inc.
Kayton Displays, Inc., Robert
Nicoll & Co.
Pilliod Cabinet Co., The
Stensgaard & Associates, W. L.
Wurzburg Bros.

DISPLAYS, FLOOR STAND
(Corrugated and Solid Fibre)

American Box Board Co.
Badger Merchandising Displays, Inc.
Container Corp. of America
Continental Container Corp.
Diamond Press Inc., The, Display-Rite Div.
Edwards & Deutsch Lithographing Co.
Gair Co., Inc., Robert
Hinde & Dauch Paper Co., The
Inland Container Corp.
Kay Displays, Inc.
Kayton Displays, Inc., Robert
Keystone Box Co.
Kress Box Co., F. J.
Magill-Weinsheimer Co.

Milprint, Inc.
National Container Corp.
Ohio Boxboard Co., The
Ottawa River Paper Co., The
Reyburn Mfg. Co., Inc., The
Schmidt Lithograph Co.
Stensgaard & Associates, W. L.
Waldorf Paper Products Co.
Wurzburg Bros.

DISPLAYS, FLOOR STAND (Lithographed)

See Lithographers

DISPLAYS, METAL

Advertising Metal Display Co.
American Can Co.
Bronzart Metals Co.
Farrington Mfg. Co.
Grammes & Sons, Inc., L. F.
Gray Wire Specialty Co., The
Kay Displays, Inc.
Union Steel Products Co.
Wurzburg Bros.

DISPLAYS, MOLDED PULP

Bronzart Metals Co.
Chaspec Mfg. Co.
Diamond Press Inc., The, Display-Rite Div.
Holed-Tite Packing Corp.
Kaumagraph Co.
Keyes Fibre Co.
Pulp Reproduction Co.
Read, Inc., Robert E.

DISPLAYS, WINDOW & COUNTER

See Boxes, Paper Set-Up
See Cartons, Folding & Display
See Lithographers
See Molders, Plastic
See Transparent Materials (Converters, Fabricators & Printers of Rigid Transparent Materials)

DROPPERS, BOTTLE

Anchor Cap & Closure Corp.
Anchor Hocking Glass Corp.
Armstrong Cork Co.
Double Duty Products, Inc.
Kimble Glass Co.
Owens-Illinois Glass Co.
Owens-Illinois Pacific Coast Co.
Pennsylvania Glass Products Co.

DRUMS, FIBRE

See Also Pail Fibre

Canister Co., The
Carpenter Container Co. Inc.
Cleveland Container Co., The
Consolidated Paper Co.
Container Co., The
Container Corp. of America
Gardner-Richardson Co., The
Gates Paper Co. Ltd., The
Gaylord Container Corp.
Master Package Corp., The
Philadelphia Carpenter Container Co., Inc.
Wurzburg Bros.

DRUMS, METAL

Aluminum Co. of America
American Can Co.
Cleveland Container Co., The
Crown Can Co., Div. Crown Cork & Seal Co. Inc.
Ellis & Sons, Inc., George D.
Owens-Illinois Can Co.
Wheeling Corrugating Co.

EMBOSSING ROLLS, PAPER

Bingham Bros. Co.
Marconetti, Inc., A. E.
Waldron Corp., John

ENVELOPES

Alderman Paper Box Corp.
American Paper Goods Co., The
Andrews Corp., P. L.
Berkowitz Envelope Co.
Brooks Bank Note Co.
Brown Bag Filling Machine Co., The
Cupples Hesse Envelope & Litho. Co.
Dennison Mfg. Co.
Mason Envelope Co.
Reynolds Metals Co.
Royal Paper Corp.
Stecher-Traung Lithograph Corp.
Tension Envelope Corp.
Tower Envelope Co.
U. S. Envelope Co.
Wolf Brothers
Wurzburg Bros.

ENVELOPES, CLOTH & COTTON-LINED PAPER

Andrews Corp., P. L.
Cottonluxe Mfg. Co.
Tension Envelope Corp.
U. S. Envelope Co.

ENVELOPES, TRANSPARENT

American Paper Goods Co., The
Andrews Corp., P. L.
Berkowitz Envelope Co.
Central States Paper & Bag Co.
Comet Envelope & Paper Co. Inc.
Crystal Transparent Mfg. Co. Inc.
Cupples Hesse Envelope & Litho. Co.
Dennison Mfg. Co.
Dobeckmun Co., The
Humitube Mfg. Co.
Mason Box Co., The
Mason Envelope Co.
Milprint, Inc.
Munson Bag Co., The
Neostyle Inc.
Print-A-Tube Co.
Royal & Co., Thomas M.
Shellmar Products Co.
Sillcocks-Miller Co., The
Tension Envelope Corp.
Tower Envelope Co.
Transparent Specialties Mfg. Co.
U. S. Envelope Co.
Wurzburg Bros.

EXCELSIOR, PAPER

See also Transparent Materials, Shredded

Benmont Papers Inc.
Inland Container Corp.
Kalamazoo Vegetable Parchment Co.
Sweetnam, Inc., Geo. H.
Yorkville Paper Co., Inc.

FILTERS & FILTER PAPER

Alsop Engineering Corp.
Kiefer Machine Co., The Karl
Liquid Carbonic Corp., The
Scientific Filter Co.
U. S. Bottlers Machinery Co.

FINISHERS, CUSTOM

See Paper Finishers (Varnish & Lacquer)

FINISHERS, DISPLAY

See Display Mounting & Finishing

FLOCKING

Cambridge Paper Box Co.
Cellusuede Products, Inc.
Chaspec Mfg. Co.
Du-Tone Ribbon Corp.

FOIL, METAL

Aluminum Co. of America
Dejonge & Co., Louis
Hampden Glazed Paper & Card Co.
Johnston Tin Foil & Metal Co., The
Keller-Dorian Paper Co.
Marvellum Co., The
McLaurin-Jones Co.
Middlesex Products Co.
Miller Paper Co.
Paper City Mfg. Co., Inc.
Reynolds Metals Co.
Williams & Co., Inc., Chas. W.

GLASS, ROD & TUBING

Corning Glass Works
Kimble Glass Co.
Owens-Illinois Pacific Coast Co.
Pennsylvania Glass Products Co.

GLUES & PASTES

See Adhesives

GOLD LEAF

See Roll Leaf

HAMMERS & TACKERS, AUTOMATIC FEED

Acme Staple Co.
Bostitch, Inc.
Heller Co., The
Paslode Co.
Wurzburg Bros.

XUM

BUYERS' DIRECTORY

of the Packaging Industries

HINGES, BOX

Farrington Mfg. Co.
Young Co., Everett

INK, LITHOGRAPHIC & PRINTING

American Printing Ink Co., Div. General Printing Ink Corp.
Chemical Color & Supply Co., Div. General Printing Ink Corp.
Crescent Ink & Color Co. of Pa.
Eagle Printing Ink Co., Div. General Printing Ink Corp.
Fuchs & Lang Mfg. Co., Div. General Printing Ink Corp.
General Printing Ink Corp.
Huber, Inc., J. M.
In-tag Division of Interchemical Corp.
International Printing Ink, Div. Interchemical Corp.
Levey Co. Inc., Fred'k H.
Markem Machine Co.
Morrill Co., Geo. H., Div. General Printing Ink Corp.
Pope & Gray Inc.
Rotogravure Div. General Printing Ink Corp.
Sun Chemical & Color Co., Div. General Printing Ink Corp.
Triangle Ink & Color Co. Inc.
Ullman Co., Sigmund, Div. General Printing Ink Corp.

INLAYS, METAL

Grammes & Sons, Inc., L. F.
Plastic Inlays Inc.

INLAYS, PLASTIC

National Plastics Inc.

JARS, GLASS

Anchor Hocking Glass Corp.
Armstrong Cork Co.
Ball Brothers Co.
Brockway Glass Co. Inc.
Carr-Lowrey Glass Co.
Glass Containers Inc.
Hazel-Atlas Glass Co.
Kimble Glass Co.
Owens-Illinois Glass Co.
Owens-Illinois Pacific Coast Co.
Pennsylvania Glass Products Co.
Super Seal Container Corp.
Swindell Brothers, Inc.
Wheaton Co., T. C.
Wurzburg Bros.

JARS, OPAL

Anchor Hocking Glass Corp.
Carr-Lowrey Glass Co.
Hazel-Atlas Glass Co.
Wheaton Co., T. C.
Wurzburg Bros.

JARS, POTTERY

Hull Pottery Co., The A. E.
Red Wing Potteries, Inc.

LABELS, FOIL

American Colortype Co.
Andersen, A. J.
Attleboro Printing & Embossing Co. Inc.
Bartlett Label Co.
Cameo Die & Label Co.
Chaspec Mfg. Co.
Chicago Printed String Co.
Craftsman Label Co.
Dennison Mfg. Co.
Fleming-Potter Co. Inc.
Foxon Co., The
Grammes & Sons, Inc., L. F.
Grand Rapids Label Co.
Johnston Tin Foil & Metal Co., The
Kaumagraph Co.
Krause, Inc., Richard M.
Lambooy Label & Wrapper Co.
Milwaukee Label & Seal Co.
Nevins-Church Press, The
Pacific Label Co.
Reynolds Metals Co.
Robinson Tag & Label Co.
St. Louis Sticker Co.
Tablet & Ticket Co., The
Tompkins' Label Service
Unique Printed Products Co. Inc.
Warner Brothers Co., The
Wurzburg Bros.

LABELS, MARKING & SHIPPING

Bartlett Label Co.
Dennison Mfg. Co.
Economy Novelty & Printing Co.
Fleming-Potter Co. Inc.
Foxon Co., The
Grand Rapids Label Co.
Howell & Co., F. M.
Inland Container Corp.
Lambooy Label & Wrapper Co.
Milwaukee Label & Seal Co.
Pictorial Paper Package Corp.
Rexford Paper Co.
Reyburn Mfg. Co., Inc., The
Robinson Tag & Label Co.
St. Louis Sticker Co.
Tablet & Ticket Co., The
Tompkins' Label Service
Unique Printed Products Co. Inc.
Wurzburg Bros.

LABELS, METAL

Attleboro Printing & Embossing Co. Inc.
Chaspec Mfg. Co.
Clark Mfg. Co., J. L.
Foxon Co., The
Grammes & Sons, Inc., L. F.
Grand Rapids Label Co.
Krause, Inc., Richard M.
Pacific Label Co.
Reynolds Metals Co.
Wurzburg Bros.

LABELS, PRINTED & LITHOGRAPHED

Addison Lithographing Co.
American Colortype Co.
Andersen, A. J.
Bartlett Label Co.
Brooks Bank Note Co.
Burt Co., Inc., F. N.
Calvert Lithographing Co.
Cambridge Paper Box Co.
Cameo Die & Label Co.
Central Lithograph Co., The
Chaspec Mfg. Co.
Chicago Printed String Co.
Craftsman Label Co.
Dennison Mfg. Co.
Economy Novelty & Printing Co.
Edwards & Deutsch Lithographing Co.
Eureka Specialty Printing Co.
Ever Ready Label Corp.
Fleming-Potter Co. Inc.
Fairchild Corp., E. E.
Fitzhugh, Inc., Wm. W.
Forbes Lithograph Co., The
Gamse Lithographing Co. Inc.
Grand Rapids Label Co.
Hazen Paper Co.
Howell & Co., F. M.
Interstate Litho. Corp.
Kaumagraph Co.
Kindred, MacLean & Co. Inc.
Krause, Inc., Richard M.
Lambooy Label & Wrapper Co.
Magill-Weinsheimer Co.
Michigan Litho. Co.
Milwaukee Label & Seal Co.
Muirson Label Co., Inc.
Nalco Inc.
National Color Printing Co., Inc., The
National Process Co., Inc., The
Nevins-Church Press, The
Niagara Lithograph Co.
Outserts Inc.
Pictorial Paper Package Corp.
Rexford Paper Co.
Reyburn Mfg. Co., Inc., The
Richardson Taylor-Globe Corp.
Robinson Tag & Label Co.
Rode & Brand
Rossotti Lithographing Co.
St. Louis Sticker Co.
Schmidt Lithograph Co.
Stecher-Traung Lithograph Corp.
Tompkins' Label Service
Trade Lithograph & Printing Co.
Trautmann, Bailey & Blampey
Unique Printed Products Co. Inc.
United States Printing & Lithograph Co., The
Waddill Printing & Lithographing Co.
Waldorf Paper Products Co.
Warner Brothers Co., The
Wilmanns Bros. Co.
Wurzburg Bros.

LABELS, STOCK

Bartlett Label Co.
Cameo Die & Label Co.
Dennison Mfg. Co.
Ever Ready Label Corp.
Grand Rapids Label Co.

Kaumagraph Co.
Lambooy Label & Wrapper Co.
Muirson Label Co., Inc.
Nalco Inc.
Reyburn Mfg. Cc., Inc., The
Rossotti Lithographing Co.
Schmidt Lithograph Co.
Strobridge Lithographing Co., The
Tompkins' Label Service
Unique Printed Products Co. Inc.
United States Printing & Lithograph Co., The
Waddill Printing & Lithographing Co.
Wurzburg Bros.

LABELS, TRANSPARENT

Cellulose Packaging Corp.
Dennison Mfg. Co.
Ever Ready Label Corp.
Foxon Co., The
General Laminating Co.
Milprint, Inc.
Neostyle Inc.
Palm, Fechteler & Co.
Paramount Paper Products Co. Inc.
Robinson Tag & Label Co.
St. Louis Sticker Co.
Shellmar Products Co.
Tablet & Ticket Co., The
Tompkins' Label Service
Unique Printed Products Co. Inc.
Wurzburg Bros.

LABELS & SEALS, EMBOSSED

Cameo Die & Label Co.
Chaspec Mfg. Co.
Dennison Mfg. Co.
Foxon Co., The
Grammes & Sons Inc., L. F.
Krause, Inc., Richard M.
Milwaukee Label & Seal Co.
Reynolds Metals Co. Inc.
Tablet & Ticket Co., The

LABORATORIES
(Independent Research & Testing)

Bridgeport Testing Laboratory Inc.
Container Testing Laboratories Inc.
Quinn Co., Don L.

LACQUERS & VARNISHES

American Colortype Co.
American Printing Ink Co., Div. General Printing Ink Corp.
American Products Mfg. Co.
Atlas Powder Co., Zapon Div.
Atlas Powder Co., Zapon-Brevolite Div.
Ault & Wiborg Corp., Subsidiary of Interchemical Corp.
Bakelite Corp.
Chemical Color & Supply Co., Div. General Printing Ink Corp.
Clover Leaf Paint & Varnish Corp.
Dispersions Process, Inc.
du Pont de Nemours & Co., Inc., E. I.
Eagle Printing Ink Co., Div. General Printing Ink Corp.
Egyptian Lacquer Mfg. Co., The
Fales Chemical Co. Inc., The
General Printing Ink Corp.
Goodyear Tire & Rubber Co., The
Huber Inc., J. M.
International Printing Ink, Div. Interchemical Corp.
Maas & Waldstein Co.
McCoy Paper Converters
Morrill Co., Geo. H., Div. General Printing Ink Corp.
National Adhesives Division of National Starch Products, Inc.
Pope & Gray Inc.
Pyroxylin Products Inc.
Reilly Tar & Chemical Corp.
Schneider Bros. Co.
Ullman Co., Sigmund, Div. General Printing Ink Corp.
Union Carbide & Carbon Corp.
Wiener Bros., Inc.

LAMINATING, CUSTOM

Arvey Corp.
Badger Merchandising Displays, Inc.
Butterfield-Barry Co. Inc., The
Dobeckmun Co., The
General Laminating Co.
Henschel Mfg. Co., C. B.
Jaypaco Corp.
Laminating Corp.
Laminoid Corp.
Menasha Products Co., The, Div. Marathon Paper Mills Co.
Mor-Gan Laminating & Foliating Co.
New York Laminating Co.
Plastics Finishing Co. Inc.
Salwen Paper Co., Joe
Shellmar Products Co.
U. S. Finishing & Mfg. Co.
Walser Mfg. Co., The
Westfield River Paper Co. Inc.

LEATHER, IMITATION

Atlas Powder Co., Zapon Div.
Columbus Coated Fabrics Corp.
du Pont de Nemours & Co., Inc., E. I.
Holyoke Card & Paper Co.
Matthias Paper Corp.
Narragansett Coated Paper Corp.
Nashua Gummed & Coated Paper Co.
Pyrotex Leather Co.
Tamm & Co.
Textileather Corp.
Union Carbide & Carbon Corp.
United Mfg. Co.
United States Rubber Co.
Williams & Co., Inc., Chas. W.

LINERS
(Box, Barrel and Bag)

Angier Corp.
Gardner-Richardson Co., The
Inland Container Corp.
Interstate Folding Box Co., The
Johnston Tin Foil & Metal Co., The
LaBoiteaux Co. Inc., The
Matthias Paper Corp.
Menasha Products Co., The
Rexford Paper Co.
Riegel Paper Corp., The
St. Regis Paper Co.
Schmidt Lithograph Co.
Shellmar Products Co.
Sherman Paper Products Corp.
Sweetnam, Inc., Geo. H.
Wurzburg Bros.

LINERS, CLOSURE

See Closure Liners

LITHOGRAPHERS

Addison Lithographing Co.
Arvey Corp.
Brooks Bank Note Co.
Burt Co., Inc., F. N.
Calvert Lithographing Co.
Casselman Inc., T. & E.
Central Lithograph Co., The
Chaspec Mfg. Co.
Dejonge & Co., Louis
Dennison Mfg. Co.
Edwards & Deutsch Lithographing Co.
Einson-Freeman Co. Inc.
Eureka Specialty Printing Co.
Fairchild Corp., E. E.
Fitzhugh, Inc., Wm. W.
Fleming-Potter Co. Inc.
Forbes Lithograph Co., The
Frohn, John C.
Gamse Lithographing Co. Inc.
Howell & Co., F. M.
Interstate Litho. Corp.
Kaumagraph Co.
Kindred, MacLean & Co. Inc.
Magill-Weinsheimer Co.
McCandlish Lithograph Corp.
Michigan Litho. Co.
Milprint, Inc.
Nalco Inc.
National Color Printing Co., Inc., The
National Folding Box Co.
National Printing & Engraving Co.
National Process Co., Inc., The
Nevins-Church Press, The
Niagara Lithograph Co.
Offset Gravure Corp.
Pictorial Paper Package Corp.
Rode & Brand
Rossotti Lithographing Co.
Schmidt Lithograph Co.
Stecher-Traung Lithograph Corp.
Stensgaard & Associates, W. L.
Strobridge Lithographing Co., The
Trade Lithograph & Printing Co.
Trautmann, Bailey & Blampey
United States Printing & Lithograph Co., The
Waddill Printing & Lithographing Co.
Wilmanns Bros. Co.
Wurzburg Bros.
Zipprodt, Inc.

XUM

MACHINES, BAG & ENVELOPE MAKING

Hayssen Mfg. Co.
Heinrich Inc., H. H.
Hudson-Sharp Machine Co.
Ivers-Lee Co.
Modern Containers, Inc.
Package Machinery Co.
Peters Machinery Co.
Pneumatic Scale Corp., Ltd.
Potdevin Machine Co.
Richard Machine Co.
Smithe Machine Co., Inc., F. L.
Stokes & Smith Co.
Triangle Package Machinery Co.
Waldron Corp., John
Weber & Co., Inc., H. G.
Wrap-Ade Machine Co. Inc.

MACHINES, BAG & ENVELOPE FILLING

Arenco Machine Co., Inc.
Automatic Scale Co.
Bagpak, Inc.
Brown Bag Filling Machine Co., The
Consolidated Packaging Machinery Corp.
Exact Weight Scale Co., The
Ferguson Co., J. L.
Food Packaging Inc.
Goat Co. Inc., The Fred
International Paper Products Corp.
Pneumatic Scale Corp., Ltd.
St. Regis Paper Co.
Stokes & Smith Co.
Triangle Package Machinery Co.
U. S. Automatic Box Machinery Co. Inc.
Weigh Right Automatic Scale Co.

MACHINES, BAG & ENVELOPE SEALING

Arenco Machine Co., Inc.
Bagpak, Inc.
Bemis Bro. Bag Co.
Betner Co., Benj. C.
Bostitch, Inc.
Consolidated Packaging Machinery Corp.
Container Equipment Corp.
Food Packaging Inc.
Goat Co. Inc., The Fred
International Paper Products Corp.
Ivers-Lee Co.
Modern Containers, Inc.
Pneumatic Scale Corp., Ltd.
Potdevin Machine Co.
St. Regis Paper Co.
Saranac Machine Co.
Stokes & Smith Co.
Triangle Package Machinery Co.
U. S. Automatic Box Machinery Co. Inc.
Wrap-Ade Machine Co. Inc.

MACHINES, BAG SEWING

Bagpak, Inc.
Consolidated Packaging Machinery Corp.
International Paper Products Corp.
Potdevin Machine Co.
St. Regis Paper Co.

MACHINES, BAG STAPLING

Acme Staple Co.
Acme Steel Co.
Bates Mfg. Co., The
Bostitch, Inc.
Dexter Folder Co.
Globe Mfg. Co.
Harris-Seybold-Potter Co.
Heller Co., The
Paslode Co.
Saranac Machine Co.

MACHINES, BANDING & WIRE STRAPPING

Acme Steel Co.
Gerrard Co., Inc., The
Scandia Mfg. Co.
Stanley Works, The

MACHINES, BOTTLE CLEANING (Air)

Kiefer Machine Co., The Karl
Pneumatic Scale Corp., Ltd.
U. S. Bottlers Machinery Co.

MACHINES, BOTTLE CLEANING (Washing)

Kiefer Machine Co., The Karl
Liquid Carbonic Corp., The
U. S. Bottlers Machinery Co.

MACHINES, BOX COLLAPSING

U. S. Automatic Box Machinery Co. Inc.

MACHINES, BOX MAKING (Folding)

Bostitch, Inc.
Ferguson Co., J. L.
International Paper Box Machine Co.
Pneumatic Scale Corp., Ltd.
Staude Mfg. Co., E. G.
U. S. Automatic Box Machinery Co. Inc.

MACHINES, BOX MAKING (Set-Up)

Globe Mfg. Co.
Inman Mfg. Co., Inc.
National Metal Edge Box Co.
New Jersey Machine Corp.
Potdevin Machine Co.
Stokes & Smith Co.

MACHINES, BOX WINDOW APPLYING

Goat Co. Inc., The Fred
International Paper Box Machine Co.
New Jersey Machine Corp.
Smithe Machine Co., Inc., F. L.
Staude Mfg. Co., E. G.

MACHINES, BRONZING

Kidder Press Co., Inc.

MACHINES, BUNDLE TYING (String)

Bunn Co., B. H.
Globe Mfg. Co.
Potdevin Machine Co.

MACHINES, BUNDLE TYING (Wire Strapping)

See Banding & Wire Strapping

MACHINES, BUNDLE WRAPPING

Hayssen Mfg. Co.
Hudson-Sharp Machine Co.
Johnson Automatic Sealer Co., Ltd.
Miller Wrapping & Sealing Machine Co.
Package Machinery Co.
Potdevin Machine Co.
Richard Machine Co.

MACHINES, CAN CAPPING

Alsop Engineering Corp.
Consolidated Packaging Machinery Corp.
Crown Cork & Seal Co., The
Kiefer Machine Co., The Karl
Liquid Carbonic Corp., The
Pneumatic Scale Corp., Ltd.
Scientific Filter Co.
Stokes & Smith Co.
U. S. Bottlers Machinery Co.

MACHINES, CAN CLOSING & SEALING

American Can Co.
Ams Machine Co., The Max
Bostitch, Inc.
Continental Can Co.
Crown Can Co., Div. Crown Cork & Seal Co. Inc.
Gates Paper Co. Ltd., The
Kiefer Machine Co., The Karl
National Can Corp.
Pneumatic Scale Corp., Ltd.
Scientific Filter Co.

MACHINES, CAN FILLING, DRY

See Machines, Filling Dry

MACHINES, CAN FILLING, LIQUID

Alsop Engineering Corp.
Crown Cork & Seal Co., The
Food Machinery Corp., Sprague-Sells Div.
Horix Manufacturing Co.
Kiefer Machine Co., The Karl
Liquid Carbonic Corp., The
Scientific Filter Co.
Stokes Machine Co., F. J.
U. S. Bottlers Machinery Co.
Vol-U-Meter Co., The

MACHINES, CAN LABELING

Alsop Engineering Corp.
Burt Machine Co.
Ferguson Co., J. L.
Food Machinery Corp., Sprague-Sells Div.
Liquid Carbonic Corp., The
New Jersey Machine Corp.
Pneumatic Scale Corp., Ltd.
Scientific Filter Co.
Standard-Knapp Corp.

MACHINES, CAP & COVER LINING

Ams Machine Co., The Max
Dewey & Almy Chemical Co.

MACHINES, CAPPING

Alsop Engineering Corp.
Aluminum Seal Co.
Anchor Cap & Closure Corp.
Anchor Hocking Glass Corp.
Consolidated Packaging Machinery Corp.
Crown Can Co., Div. Crown Cork & Seal Co. Inc.
Crown Cork & Seal Co., The
Ferguson Co., J. L.
Goat Co. Inc., The Fred
Horix Manufacturing Co.
Kiefer Machine Co., The Karl
Liquid Carbonic Corp., The
Pneumatic Scale Corp., Ltd.
Scientific Filter Co.
U. S. Bottlers Machinery Co.

MACHINES, CAPSULE WRAPPING

Ivers-Lee Co.

MACHINES, CARTON FORMING, LINING, FILLING, FOLDING, CLOSING

Bostitch, Inc.
Ferguson Co., J. L.
Goat Co. Inc., The Fred
Johnson Automatic Sealer Co., Ltd.
National Folding Box Co.
National Metal Edge Box Co.
Peters Machinery Co.
Pneumatic Scale Corp., Ltd.
Redington Co., F. B.
Stokes & Smith Co.
Triangle Package Machinery Co.
U. S. Automatic Box Machinery Co. Inc.

MACHINES, CARTON LOADING

Container Equipment Corp.
Ferguson Co., J. L.
Goat Co. Inc., The Fred
Jeffrey Mfg. Co., The
Redington Co., F. B.
Stokes & Smith Co.
U. S. Automatic Box Machinery Co. Inc.

MACHINES, CARTON PARAFFINING

International Paper Box Machine Co.
Potdevin Machine Co.

MACHINES, CASE LOADING

Container Equipment Corp.
Crown Cork & Seal Co., The
Ferguson Co., J. L.
Standard-Knapp Corp.

MACHINES, CASE PRINTING

Hooper Co. Inc., F. X.
Langston Co., Samuel M.
Swift Jr. Inc., G. W.

MACHINES, CASE SEALING (Glue)

Container Equipment Corp.
Ferguson Co., J. L.
Kiefer Machine Co., The Karl
Standard-Knapp Corp.
Weigh Right Automatic Scale Co.

MACHINES, CASE SEALING (Gummed Tape)

Arenco Machine Co., Inc.
Container Equipment Corp.
McLaurin-Jones Co.
Nashua Gummed & Coated Paper Co.

MACHINES, CASE SEALING (Staples and Wire)

Acme Staple Co.
Acme Steel Co.
Bostitch, Inc.
Dexter Folder Co.
Heller Co., The
Ideal Stitcher & Mfg. Co.
Saranac Machine Co.

MACHINES, CELLULOSE TUBE MAKING

Hudson-Sharp Machine Co.
Knowlton Co., M. D.
Potdevin Machine Co.

MACHINES, CIRCULAR INSERTING

Weigh Right Automatic Scale Co.

MACHINES, COATING (Lacquer and Varnish)

Chambers Bros. Co.
Marconetti, Inc., A. E.
Potdevin Machine Co.
Rotogravure Engineering Corp.
Rutherford Machinery Co., Div. General Printing Ink Corp.
Waldron Corp., John

MACHINES, COLLAPSIBLE TUBE (Filling & Sealing)

Arenco Machine Co., Inc.
Colton Co., Arthur
Kiefer Machine Co., The Karl
Stokes Machine Co., F. J.

MACHINES, CONVEYING

See Conveyors

MACHINES, CORKING

Ermold Co., Edward
Horix Manufacturing Co.
Kiefer Machine Co., The Karl
Pneumatic Scale Corp., Ltd.
U. S. Bottlers Machinery Co.

MACHINES, COTTON INSERTING

Consolidated Packaging Machinery Corp.
Lakso Company, The
New Jersey Machine Corp.

MACHINES, COUNTING

Colton Co., Arthur
Ferguson Co., J. L.
Redington Co., F. B.
Triangle Package Machinery Co.
Veeder-Root Inc.

MACHINES, CREPING

Hudson-Sharp Machine Co.
Waldron Corp., John

MACHINES, CRIMPING, COLLAPSIBLE TUBE

Stokes Machine Co., F. J.

MACHINES, CRIMPING & SEALING (Heat Sealing Materials)

Container Equipment Corp.
Food Packaging Inc.
Ivers-Lee Co.
Marconetti, Inc., A. E.
Miller Wrapping & Sealing Machine Co.
Modern Containers, Inc.
Potdevin Machine Co.
Rotogravure Engineering Corp.
Stokes Machine Co., F. J.
Waldron Corp., John
Wrap-Ade Machine Co. Inc.
Wurzburg Bros.

MACHINES, DIE CUTTING

Champlain Corp.
Globe Mfg. Co.
Goat Co. Inc., The Fred
Harris-Seybold-Potter Co.
Hulbert Engineering Corp.
Potdevin Machine Co.
Rotogravure Engineering Corp.
Waddill Printing & Lithographing Co.

MACHINES, DOMING (Boxes)

Globe Mfg. Co.
Hulbert Engineering Corp.
Knowlton Co., M. D.
New Jersey Machine Corp.

MACHINES, EMBOSSING

Hudson-Sharp Machine Co.
Waldron Corp., John

XUM

MACHINES, ENVELOPE MAKING

Ivers-Lee Co.
Pneumatic Scale Corp., Ltd.
Potdevin Machine Co.
Smithe Machine Co., Inc., F. L.
Staude Mfg. Co., E. G.
Wrap-Ade Machine Co. Inc.

MACHINES, FIBRE CAN MAKING

Ferguson Co., J. L.
Hudson-Sharp Machine Co.
Hulbert Engineering Corp.
Knowlton Co., M. D.
Langston Co., Samuel M.

MACHINES, FILLING, DRY
(Gross and Net Weight)

Arenco Machine Co., Inc.
Automatic Scale Co.
Consolidated Packaging Machinery Corp.
Exact Weight Scale Co., The
Ferguson Co., J. L.
Goat Co. Inc., The Fred
Gump Co., B. F.
Johnson Automatic Sealer Co., Ltd.
Pneumatic Scale Corp., Ltd.
St. Regis Paper Co.
Stokes Machine Co., F. J.
Stokes & Smith Co.
Toledo Scale Co.
Triangle Package Machinery Co.
U. S. Automatic Box Machinery Co. Inc.
Weigh Right Automatic Scale Co.

MACHINES, FILLING DRY
(Volumetric)

Arenco Machine Co., Inc.
Automatic Scale Co.
Brown Bag Filling Machine Co., The
Consolidated Packaging Machinery Corp.
Ferguson Co., J. L.
Goat Co. Inc., The Fred
Ivers-Lee Co.
Johnson Automatic Sealer Co., Ltd.
Peerless Products Mfg. Co.
Pneumatic Scale Corp., Ltd.
Stokes Machine Co., F. J.
Stokes & Smith Co.
Triangle Package Machinery Co.
U. S. Automatic Box Machinery Co. Inc.
Weigh Right Automatic Scale Co.

MACHINES, FILLING, LIQUID
(Automatic and Semi-Automatic)

Alsop Engineering Corp.
Arenco Machine Co., Inc.
Colton Co., Arthur
Crown Cork & Seal Co., The
Food Machinery Corp., Sprague-Sells Div.
Horix Manufacturing Co.
Kiefer Machine Co., The Karl
Liquid Carbonic Corp., The
Pneumatic Scale Corp., Ltd.
Scientific Filter Co.
U. S. Bottlers Machinery Co.
Vol-U-Meter Co., The

MACHINES, FILLING SEMI-LIQUID

Arenco Machine Co., Inc.
Colton Co., Arthur
Food Machinery Corp., Sprague-Sells Div.
Horix Manufacturing Co.
Kiefer Machine Co., The Karl
Pneumatic Scale Corp., Ltd.
Scientific Filter Co.
Stokes Machine Co., F. J.
Stokes & Smith Co.
U. S. Bottlers Machinery Co.
Vol-U-Meter Co., The

MACHINES, FOLDING

Knowlton Co., M. D.

MACHINES, GLUING
(For Box Wraps)

Globe Mfg. Co.
Hayssen Mfg. Co.
Knowlton Co., M. D.
New Jersey Machine Corp.
Potdevin Machine Co.
Rotogravure Engineering Corp.
Scientific Filter Co.
Stokes & Smith Co.
Weigh Right Automatic Scale Co.

MACHINES, GRANULATING

Colton Co., Arthur
Stokes Machine Co., F. J.

MACHINES, LABELING

Alsop Engineering Corp.
Arenco Machine Co., Inc.
Burt Machine Co.
Diagraph-Bradley Stencil Machine Corp.
Economic Machinery Co.
Ermold Co., Edward
Ever Ready Label Corp.
Ferguson Co., J. L.
Globe Mfg. Co.
Knowlton Co., M. D.
Liquid Carbonic Corp., The
New Jersey Machine Corp.
Package Machinery Co.
Pneumatic Scale Corp., Ltd.
Potdevin Machine Co.
Redington Co., F. B.
Scandia Mfg. Co.
Scientific Filter Co.
Standard-Knapp Corp.
Stokes & Smith Co.

MACHINES, LABEL MOISTENING OR GUMMING

Diagraph-Bradley Stencil Machine Corp.
New Jersey Machine Corp.
Scientific Filter Co.
U. S. Bottlers Machinery Co.
Wurzburg Bros.

MACHINES, LAMINATING

Hudson-Sharp Machine Co.
Knowlton Co., M. D.
Marconetti, Inc., A. E.
Meisel Press Mfg. Co.
Mor-Gan Laminating & Foliating Co.
Potdevin Machine Co.
Rotogravure Engineering Corp.
Waldron Corp., John
Wurzburg Bros.

MACHINES, METAL CAN MAKING

Ams Machine Co., The Max

MACHINES, METAL EDGE STAYING

National Metal Edge Box Co.

MACHINES, MILK BOTTLE HOODING

Aluminum Seal Co.
Crown Cork & Seal Co., The
Package Machinery Co.

MACHINES, NUMBERING, PRINTING OR PERFORATING

American Perforator Co., The
Bates Mfg. Co., The
Ferguson Co., J. L.
Force & Co. Inc., Wm. A.
Harris-Seybold-Potter Co.
Horix Manufacturing Co.
Markem Machine Co.
Meisel Press Mfg. Co.
New Jersey Machine Corp.
Potdevin Machine Co.
Rotogravure Engineering Corp.

MACHINES, PACKET FILLING

Arenco Machine Co., Inc.
Automatic Scale Co.
Brown Bag Filling Machine Co., The
Consolidated Packaging Machinery Corp.
Ferguson Co., J. L.
Hulbert Engineering Corp.
Redington Co., F. B.
Stokes & Smith Co.
Triangle Package Machinery Co.
U. S. Automatic Box Machinery Co. Inc.

MACHINES, PAPER DRILLING

Harris-Seybold-Potter Co.

MACHINES, PAPER MILK BOTTLE FORMING & FILLING

American Can Co.
American Paper Bottle Co.
American Sealcone Corp.
Ex-Cello-O Corp.
Purity Paper Vessels Co.
Reed Container Co. Inc.

MACHINES, PARTITION ASSEMBLING

Hooper Co., Inc., F. X.
Inman Mfg. Co., Inc.

MACHINES, PARTITION MAKING

Hooper Co. Inc., F. X.

MACHINES, POURING SPOUT INSERTION

American Aluminum Ware Co.

MACHINES, PREFORMING & TABLETTING

Colton Co., Arthur
Stokes Machine Co., F. J.

MACHINES, PRINTING

See Presses, Printing

MACHINES, RIGID TRANSPARENT FABRICATING

Able Machine & Tool Works
Camford Machine Co.
Globe Mfg. Co.
Grimes & Harris
Hulbert, E. F.
Knowlton Co., M. D.
National Metal Edge Box Co.
Taber Instrument Co.

MACHINES, ROLL LEAF STAMPING

Griffin, Campbell, Hayes, Walsh, Inc.
Markem Machine Co.
Peerless Roll Leaf Co., Inc.

MACHINES, ROLL SLITTERS & REWINDERS

Beck Machine Co., Charles
Globe Mfg. Co.
Kidder Press Co., Inc.
Langston Co., Samuel M.
Meisel Press Mfg. Co.
Potdevin Machine Co.
Rotogravure Engineering Corp.
Waldron Corp., John

MACHINES, SHEETING

Beck Machine Co., Charles
Champlain Corp.
Globe Mfg. Co.
Hudson-Sharp Machine Co.
Kidder Press Co., Inc.
Knowlton Co., M. D.
Miller Wrapping & Sealing Machine Co.
Peters Machinery Co.
Potdevin Machine Co.
Rotogravure Engineering Corp.
Wrap-Ade Machine Co. Inc.

MACHINES, STATIC ELIMINATING

Kidder Press Co., Inc.
Potdevin Machine Co.
Simco Co., The

MACHINES, STENCILING

Bradley Mfg. Co., A. J.
Diagraph-Bradley Stencil Machine Corp.
Ideal Stencil Machine Co.
Marsh Stencil Machine Co.

MACHINES, TABLET COUNTING & PACKAGING

Arenco Machine Co., Inc.
Colton Co., Arthur
Ivers-Lee Co.
Redington Co., F. B.
Stokes Machine Co., F. J.
Triangle Package Machinery Co.
U. S. Automatic Box Machinery Co. Inc.
Weigh Right Automatic Scale Co.

MACHINES, TEA BALL & TEA BAG

Pneumatic Scale Corp., Ltd.

MACHINES, TESTING
(Paper and Board)

LaBoiteaux Co. Inc., The
Taber Instrument Co.
Thwing-Albert Instrument Co.

MACHINES, TIGHT WRAPPING
(For Carton Shells)

Pneumatic Scale Corp., Ltd.
Stokes & Smith Co.
U. S. Automatic Box Machinery Co. Inc.

MACHINES, TRANSMISSION
(Variable Speed)

Allis-Chalmers Mfg. Co.
Lewellen Mfg. Co.
Link-Belt Co.
Potdevin Machine Co.
Reeves Pulley Co.

MACHINES, WAXING

Hudson-Sharp Machine Co.
Knowlton Co., M. D.
Potdevin Machine Co.
Rotogravure Engineering Corp.
Waldron Corp., John

MACHINES, WEIGHING

(See Scales)

MACHINES, WIRE STAPLING

Acme Staple Co.
Acme Steel Co.
Bates Mfg. Co., The
Bostitch, Inc.
Globe Mfg. Co.
Heller Co., The
Ideal Stitcher & Mfg. Co.
Inland Container Corp.
Knowlton Co., M. D.
Paslode Co.
Wurzburg Bros.

MACHINES, WIRE STITCHING

Acme Steel Co.
Bostitch, Inc.
Dexter Folder Co.
Globe Mfg. Co.
Harris-Seybold-Potter Co.
Heller Co., The
Ideal Stitcher & Mfg. Co.
Knowlton Co., M. D.
Paslode Co.
Saranac Machine Co.
Wurzburg Bros.

MACHINES, WRAPPING
(Bread and Cake)

Hayssen Mfg. Co.
Hudson-Sharp Machine Co.
Johnson Automatic Sealer Co., Ltd.
Miller Wrapping & Sealing Machine Co.
National Bread Wrapping Machine Co.
Scandia Mfg. Co.

MACHINES, WRAPPING
(Butter)

Hayssen Mfg. Co.
Redington Co., F. B.

MACHINES, WRAPPING
(Cigar)

Colton Co., Arthur
Hayssen Mfg. Co.
Hudson-Sharp Machine Co.
Package Machinery Co.

MACHINES, WRAPPING
(Stretch Wrapping)

Stokes & Smith Co.

MACHINES, WRAPPING
(Transparent Cellulose, Glassine, Waxed Paper, Etc.)

Globe Mfg. Co.
Hayssen Mfg. Co.
Ivers-Lee Co.
Johnson Automatic Sealer Co., Ltd.
Miller Wrapping & Sealing Machine Co.
Modern Equipment Corp.
Package Machinery Co.
Redington Co., F. B.
Richard Machine Co.
Scandia Mfg. Co.
Stokes & Smith Co.
U. S. Automatic Box Machinery Co. Inc.

METAL INLAYS
(For Plastics)

See Inlay, Metal

MOLDERS
(Lead & Antimony Castings)

Consolidated Fruit Jar Co.

MOLDERS, PLASTIC

American Hard Rubber Co.
American Insulator Corp.
American Molded Products Co.
American Molding Co.
American Phenolic Corp.
Amos-Thompson Corp.
Armstrong Cork Co.
Associated Attleboro Mfrs. Inc.
Auburn Button Works, Inc.
Boonton Molding Co.

XUM

Bridgeport Moulded Prod. Inc.
Bryant Electric Co.
Butterfield Inc., T. F.
Cardinal Corp.
Carlson Autopress Corp.
Central Die Casting & Mfg. Co.
Chicago Molded Products Corp.
Colt's Patent Fire Arms Mfg. Co.
Columbia Protektosite Co. Inc.
Columbus Plastic Products Co. Inc.
Commonwealth Plastics Co.
Connecticut Plastic Products Co.
Consolidated Molded Products Corp.
Croasdale & DeAngelis
Davies Molding Co., Harry
Diemolding Corp.
Eclipse Moulded Products Co.
Erie Resistor Corp.
Firestone Rubber & Latex Products Co.
Franklin Plastic & Die Casting Co.
Gemloid Corp.
General Electric Co., Plastics Dept.
General Industries Co.
Gits Molding Corp.
Grigoleit Co., The
Imperial Molded Products Corp.
Industrial Molded Products Co.
International Molded Plastics, Inc.
Kuhn & Jacob Moulding & Tool Co.
Kurz-Kasch Inc.
Mack Molding Co.
Martindell Molding Co.
Mason Co. Inc., Thomas
Michigan Molded Plastics Inc.
Mills Corp., Elmer E.
National Plastics, Inc.
Niagara Insul-Bake Specialty Co., Inc.
Northern Industrial Chemical Co.
Norton Laboratories Inc.
Oris Mfg. Co., Inc.
Peerless Molded Plastics
Plastic & Die Cast Prod. Corp.
Plastic Molding Corp.
Plastics Inc.
Plastics Turning Co. Inc.
Pyro Plastics Co.
Rathbun Molding Corp.
Recto Molded Products Inc.
Remler Co. Ltd.
Reynolds Spring Co., Molded Plastics Div.
Richardson Co., The
Shaw Insulator Co.
Sinco Tool & Mfg. Co.
Sobenite Inc.
Standard Products Co., The, Thermo-Plastics Div.
Sterling Injection Molding Inc.
Sterling Plastics Co.
Stokes Rubber Co., Joseph
Superior Plastics Co.
Synthetic Moulded Products Co.
Tech-Art Plastics Co.
Terkelsen Machine Co.
Universal Plastics Corp.
Van Norman Molding Co.
Victor Metal Products Corp.
Voges Manufacturing Co., Inc., The
Waterbury Button Co., The
Watertown Mfg. Co.
Windman Bros.
Zenith Plastics Inc.

OPENING TAPE
(For Cellophane Packages)

Dobeckmun Co.
du Pont de Nemours & Co. Inc., E. I.
Sylvania Industrial Corp.
Shellmar Products Co.

PACKAGE DESIGN CONSULTANTS
(Independent Organizations)

Aids, Inc.
Alcott, Thoner & Marsh
Allen, Arthur S.
Arens, Egmont
Bach, Oscar B.
Baermann, Walter
Bayer, Herbert
Bellisio, Bartolomeo
Bernhard, Lucian
Berni, A.
Blumenthal, Margaret
Breen, Fred
Carter, Joseph
Cheron, Pierre J.
Chipman, Richmond Lane
Chirpe, W. Rodney
Clarke, Rene
Colwell, Laurence J.
Condon, Frank
Cooper, R. G.
Croce, Isabel M.
Cruze, Charles
D'Addario, Thomas
Davison, George M.
DeNina, James Andrew
Designers for Industry, Inc.
Dunne, Liam
Farrel, Harry H.
Federico, Joseph B.
Freeman, Edna Leslie
Gerth, Ruth
Gianninoto, Frank
Goldsborough, Francis F.
Grau, Russell
Grover & Associates, Frederic S.
Hall, Frances Cushing
Haverlee, Arnold
Hodges, Inc. Guy W.
Hornung, Clarence P.
Jones, E. Willis
Karasz, Ilonka
Ketcham, Howard
Kline, Leon M.
Knoche, Lucille
Koch, Karl Peter
Kogan, Belle
Koodin, Ben
Koster, Louis H.
Lappert, Jack D.
Lewis, Ben
Lux, Eugene J.
Martial & Scull
Maurer, Sascha A.
Mayer, Fred A.
Mihm, Theodore W.
Murray & Scheiding
Nickelson, John
O'Neil, William
Parzinger, Tommi
Phenix Associates
Post, Harold Philip
Ressinger, Paul
Sakier, George
Scheele, Edwin H.
Schusterman, William V.
Spuehler, Ernst A.
Swibold, Duane
Tarpey, Thomas
Thelander, Clement J.
Ullman, Martin
Weeks, Wentworth
Welden, W. Archibald
Wheeler, Leonard A.
Wilmet, Inc., Georges
Woodbury, C. O.

PACKAGING, CUSTOM

Brooks Bank Note Co.
Carlson Autopress Corp.
Interstate Folding Box Co., The
Myers, Inc., J. & P. B.
New England Collapsible Tube Co.

PADDING & WADDING

American Lace Paper Co.
Kimberly-Clark Corp.
Republic Paperboard Co., The
Rinkle Krinkle Paper Co.
Sweetnam, Inc., Geo. H.
Union Wadding Co.

PADS, ABSORBENT PACKING

Kimberly-Clark Corp.
Sweetnam, Inc., Geo. H.

PAILS, FIBRE

Cleveland Container Co., The
Master Package Corp., The
Sutherland Paper Co.

PAILS, METAL

American Can Co.
Continental Can Co.
Crown Can Co., Div. Crown Cork & Seal Co. Inc.
Ellis & Sons, Inc., George D.
Owens-Illinois Can Co.
Wheeling Corrugating Co.

PAILS, PAPER
(For Ice Cream)

Bloomer Bros. Co.

PAPER, ALKALI-PROOF

Dejonge & Co., Louis
Fitchburg Paper Co.
Kalamazoo Vegetable Parchment Co.
Pejepscot Paper Co.
Riegel Paper Corp., The
Springfield Coated Paper Corp.
Union Carbide & Carbon Corp.
United Mfg. Co.
Warren Co., S. D.

PAPER, ANTI-TARNISH

Aldine Paper Co.
Dejonge & Co., Louis
Hazen Paper Co.
Kalamazoo Vegetable Parchment Co.
Keller-Dorian Paper Co.
Matthias Paper Corp.
Mosinee Paper Mills Co.
Pejepscot Paper Co.
Riegel Paper Corp., The
Springfield Coated Paper Corp.
Sweetnam, Inc., Geo. H.
United Mfg. Co.
Wurzburg Bros.

PAPER BASE
(For Converters)

Dobeckmun Co., The
Fitchburg Paper Co.
Pejepscot Paper Co.
Riegel Paper Corp., The
St. Regis Paper Co.
Warren Co., S. D.

PAPER, BOX LACE

American Lace Paper Co.
Lebanon Paper Box Co.
Matthias Paper Corp.
U. S. Lace Paper Works, Inc.
Williams & Co., Inc., Chas. W.

PAPER, CHENILLE PROCESSED

Aldine Paper Co.
Du-Tone Ribbon Corp.
Matthias Paper Corp.

PAPER, CORK

Aldine Paper Co.
Armstrong Cork Co.
Dejonge & Co., Louis
District of Columbia Paper Mills Inc.
Kalamazoo Vegetable Parchment Co.
Kupfer Bros. Paper Co.
Matthias Paper Corp.
Paper Affiliates Co. Inc.
Tamm & Co.
Williams & Co., Inc., Chas. W.

PAPER, CORRUGATED FOR WINDOW TRIMMING

Angier Corp.
Blake, Moffitt & Towne
Inland Container Corp.
Reyburn Mfg. Co., Inc., The
Schmidt Lithograph Co.
Sherman Paper Products Corp.
Sweetnam, Inc., Geo. H.
Wurzburg Bros.
Yorkville Paper Co., Inc.

PAPER, CREPE

Angier Corp.
Blake, Moffitt & Towne
Crown Zellerbach Corp.
Dennison Mfg. Co.
Kalamazoo Vegetable Parchment Co.
Rinkle Krinkle Paper Co.
Sanderson Products, Inc.
Sweetnam, Inc., Geo. H.

PAPER, EXCELSIOR & SHREDDED

Benmont Papers Inc.
Blake, Moffitt & Towne
Crown Zellerbach Corp.
Dennison Mfg. Co.
Inland Container Corp.
Kalamazoo Vegetable Parchment Co.
Sweetnam, Inc., Geo. H.
Wurzburg Bros.
Yorkville Paper Co., Inc.

PAPER, FANCY PRINTED OR EMBOSSED

Aldine Paper Co.
Benmont Papers Inc.
Chicago Printed String Co.
Crown Zellerbach Corp.
Decotone Products
Dejonge & Co., Louis
Dennison Mfg. Co.
District of Columbia Paper Mills Inc.
Hampden Glazed Paper & Card Co.
Hazen Paper Co.
Hinkson Paper Co.
Holyoke Card & Paper Co.
Kalamazoo Vegetable Parchment Co.
Keller-Dorian Paper Co.
Kupfer Bros. Paper Co.
Marvellum Co., The
Matthias Paper Corp.
Narragansett Coated Paper Corp.
Nashua Gummed & Coated Paper Co.
New England Card & Paper Co., Inc.
Paper Affiliates Co. Inc.
Paper City Mfg. Co., Inc.
Pejepscot Paper Co.
Racquette River Paper Co., The
Riegel Paper Corp., The
Royal Paper Corp.
Sanderson Products, Inc.
Springfield Coated Paper Corp.
Stecher-Traung Lithograph Corp.
Sweetnam, Inc., Geo. H.
Tamm & Co.
Trade Lithograph & Printing Co.
Trautmann, Bailey & Blampey
United Mfg. Co.
Wiener Bros. Inc.
Williams & Co., Inc., Chas. W.
Yorkville Paper Co., Inc.

PAPER, FINISHERS
(Varnish and Lacquers)

American Colortype Co.
Decotone Products
Dejonge & Co., Louis
du Pont de Nemours & Co., Inc., E. I.
Hazen Paper Co.
Kupfer Bros. Paper Co.
Matthias Paper Corp.
Narragansett Coated Paper Corp.
Springfield Coated Paper Corp.
Waddill Printing & Lithographing Co.
Wiener Bros., Inc.
Williams & Co., Inc., Chas. W.

PAPER, FLINT GLAZED

Blake, Moffitt & Towne
Dejonge & Co., Louis
Hampden Glazed Paper & Card Co.
Hinkson Paper Co.
Kupfer Bros. Paper Co.
Matthias Paper Corp.
McLaurin-Jones Co.
Paper Affiliates Co. Inc.
Royal Paper Corp.
Sanderson Products, Inc.
United Mfg. Co.
Williams & Co., Inc., Chas. W.
Wyomissing Glazed Paper Co.

PAPER, FRICTION GLAZED

Blake, Moffitt & Towne
Crown Zellerbach Corp.
Dejonge & Co., Louis
Hampden Glazed Paper & Card Co.
Hinkson Paper Co.
Kupfer Bros. Paper Co.
Marvellum Co., The
Matthias Paper Corp.
Middlesex Products Co.
Narragansett Coated Paper Corp.
Nashua Gummed & Coated Paper Co.
New England Card & Paper Co., Inc.
Paper Affiliates Co. Inc.
Royal Paper Corp.
Sanderson Products, Inc.
Springfield Coated Paper Corp.
United Mfg. Co.
Williams & Co., Inc., Chas. W.
Wyomissing Glazed Paper Co.

PAPER, GLASSINE
(Plain and Embossed)

Blake, Moffitt & Towne
Deerfield Glassine Co.
Dejonge & Co., Louis
Dennison Mfg. Co.
Hampden Glazed Paper & Card Co.
Kupfer Bros. Paper Co.
Marvellum Co., The
Mason Envelope Co.
Matthias Paper Corp.
Paper Affiliates Co. Inc.
Riegel Paper Corp., The
Royal Paper Corp.
Sanderson Products, Inc.
Springfield Coated Paper Corp.
Sweetnam, Inc., Geo. H.
Westfield River Paper Co. Inc.
Williams & Co., Inc., Chas. W.
Wurzburg Bros.
Yorkville Paper Co., Inc.

PAPER, GUMMED

Blake, Moffitt & Towne
Crowell Corp., The

XUM

Crown Zellerbach Corp.
Dejonge & Co., Louis
Dennison Mfg. Co.
Eureka Specialty Printing Co.
Gummed Products Co., The
Gummed Tape & Devices Co.
Kupfer Bros. Paper Co.
McLaurin-Jones Co.
Mid-States Gummed Paper Co.
Nashua Gummed & Coated Paper Co.
Paper Affiliates Co. Inc.
Rexford Paper Co.
Royal Paper Corp.
Williams & Co., Inc., Chas. W.
Yorkville Paper Co., Inc.

PAPER, IMITATION LEATHER

Aldine Paper Co.
Atlas Powder Co., Zapon Div.
Blake, Moffitt & Towne
Dejonge & Co., Louis
du Pont de Nemours & Co. Inc., E. I.
Hampden Glazed Paper & Card Co.
Hazen Paper Co.
Hinkson Paper Co.
Holyoke Card & Paper Co.
Kalamazoo Vegetable Parchment Co.
Kupfer Bros. Paper Co.
Marvellum Co, The
Matthias Paper Corp.
Middlesex Products Co.
Narragansett Coated Paper Corp.
New England Card & Paper Co., Inc.
Paper Affiliates Co. Inc.
Racquette River Paper Co., The
Riegel Paper Corp., The
Royal Paper Corp.
Sanderson Products, Inc.
Sherman Paper Products Corp.
Springfield Coated Paper Corp.
Tamm & Co.
Textileather Corp.
United Mfg. Co.
Williams & Co., Inc., Chas. W.

PAPER, KRAFT

Blake, Moffitt & Towne
Crown Zellerbach Corp.
Dejonge & Co., Louis
Gaylord Container Corp.
Kalamazoo Vegetable Parchment Co.
LaBoiteaux Co. Inc., The
Matthias Paper Corp.
Mosinee Paper Mills Co.
Narragansett Coated Paper Corp.
Paterson Parchment Paper Co.
Pejepscot Paper Co.
Racquette River Paper Co., The
St. Regis Paper Co.
Union Bag & Paper Corp.
United Mfg. Co.
Williams & Co., Inc., Chas. W.
Wurzburg Bros.
Yorkville Paper Co., Inc.

PAPER, LINING

Crown Zellerbach Corp.
Dejonge & Co., Louis
Fitchburg Paper Co.
Hazen Paper Co.
Kalamazoo Vegetable Parchment Co.
Kupfer Bros. Paper Co.
Matthias Paper Corp.
Paterson Parchment Paper Co.
Pejepscot Paper Co.
Racquette River Paper Co., The
Riegel Paper Corp., The
Royal Paper Corp.
St. Regis Paper Co.
Sanderson Products, Inc.
Sweetnam, Inc., Geo. H.
United Mfg. Co.
Warren Co., S. D.
Williams & Co., Inc., Chas. W.

PAPER, METALLIC-COATED
(Plain and Embossed)

Aldine Paper Co.
Aluminum Co. of America
Artcote Papers, Inc.
Blake, Moffitt & Towne
Decotone Products
Dejonge & Co., Louis
Hampden Glazed Paper & Card Co.
Hazen Paper Co.
Hinkson Paper Co.
Holyoke Card & Paper Co.
Johnston Tin Foil & Metal Co., The
Kalamazoo Vegetable Parchment Co.
Keller-Dorian Paper Co.
Kupfer Bros. Paper Co.
Marvellum Co., The
Matthias Paper Corp.
McLaurin-Jones Co.
Middlesex Products Co.
Miller Paper Co.
Narragansett Coated Paper Corp.
Nashua Gummed & Coated Paper Co.
Paper Affiliates Co. Inc.
Racquette River Paper Co., The
Reynolds Metals Co.
Royal Paper Corp.
Sanderson Products, Inc.
Tamm & Co.
United Mfg. Co.
Williams & Co., Inc., Chas. W.
Wyomissing Glazed Paper Co.

PAPER, PARCHMENT

Aldine Paper Co.
Blake, Moffitt & Towne
Dejonge & Co., Louis
Kalamazoo Vegetable Parchment Co.
Kupfer Bros. Paper Co.
Paterson Parchment Paper Co.
Sanderson Products, Inc.
Springfield Coated Paper Corp.
Sweetnam, Inc., Geo. H.
Williams & Co., Inc., Chas. W.
Yorkville Paper Co., Inc.

PAPER, PLATED

Dejonge & Co., Louis
Dennison Mfg. Co.
Hampden Glazed Paper & Card Co.
Hinkson Paper Co.
Holyoke Card & Paper Co.
Kalamazoo Vegetable Parchment Co.
Kupfer Bros. Paper Co.
Marvellum Co., The
Matthias Paper Corp.
McLaurin-Jones Co.
Middlesex Products Co.
Narragansett Coated Paper Corp.
Nashua Gummed & Coated Paper Co.
Paper Affiliates Co. Inc.
Racquette River Paper Co., The
Royal Paper Corp.
Sanderson Products, Inc.
Springfield Coated Paper Corp.
United Mfg. Co.
Warren Co., S. D.
Williams & Co., Inc., Chas. W.
Wyomissing Glazed Paper Co.

PAPER, PYROXYLIN-COATED

Aldine Paper Co.
Artcote Papers, Inc.
Atlas Powder Co., Zapon Div.
Blake, Moffitt & Towne
Dejonge & Co., Louis
Dennison Mfg. Co.
du Pont de Nemours & Co. Inc., E. I.
Hampden Glazed Paper & Card Co.
Hazen Paper Co.
Hinkson Paper Co.
Kupfer Bros. Paper Co.
McLaurin-Jones Co.
Matthias Paper Corp.
Miller Paper Co.
Narragansett Coated Paper Corp.
Paper Affiliates Co. Inc.
Pyrotex Leather Co.
Royal Paper Corp.
Sanderson Products, Inc.
Textileather Corp.
Williams & Co., Inc., Chas. W.

PAPER, SHREDDED

Benmont Papers Inc.
Blake, Moffitt & Towne
Crown Zellerbach Corp.
Dennison Mfg. Co.
Inland Container Corp.
Kalamazoo Vegetable Parchment Co.
Newark Paraffine & Parchment Paper Co.
Paterson Parchment Paper Co.
Sweetnam, Inc., Geo. H.
Wurzburg Bros.
Yorkville Paper Co., Inc.

PAPER, SPECIALTY, ALL TYPES FOR CONVERTORS

Crown Zellerbach Corp.
Dejonge & Co., Louis
Fitchburg Paper Co.
Kupfer Bros. Paper Co.
Matthias Paper Corp.
McLaurin-Jones Co.
Narragansett Coated Paper Corp.

Paper Affiliates Co. Inc.
Paper City Mfg. Co., Inc.
Pejepscot Paper Co.
Racquette River Paper Co., The
Republic Paperboard Co., The
Riegel Paper Corp., The
United Mfg. Co.
Warren Co., S. D.
Westfield River Paper Co. Inc.
Williams & Co., Inc., Chas. W.

PAPER, TRADEMARK

Aldine Paper Co.
Decotone Products
Dejonge & Co., Louis
District of Columbia Paper Mills Inc.
Fitchburg Paper Co.
Hampden Glazed Paper & Card Co.
Hazen Paper Co.
Hinkson Paper Co.
Holyoke Card & Paper Co.
Kupfer Bros. Paper Co.
Marvellum Co., The
Matthias Paper Corp.
Nashua Gummed & Coated Paper Co.
New England Card & Paper Co., Inc.
Paper Affiliates Co. Inc.
Pejepscot Paper Co.
Racquette River Paper Co., The
Royal Paper Corp.
Sanderson Products, Inc.
Springfield Coated Paper Corp.
Trade Lithograph & Printing Co.
United Mfg. Co.
Westfield River Paper Co. Inc.
Williams & Co., Inc., Chas. W.
Yorkville Paper Co., Inc.

PAPER, VELOUR
(Plain, Printed and Embossed)

Aldine Paper Co.
Blake, Moffitt & Towne
Cellusuede Products, Inc.
Dejonge & Co., Louis
District of Columbia Paper Mills Inc.
Keller-Dorian Paper Co.
Kupfer Bros. Paper Co.
Matthias Paper Corp.
Nashua Gummed & Coated Paper Co.
Sanderson Products, Inc.
Tamm & Co.
United Mfg. Co.
Williams & Co., Inc., Chas. W.

PAPER, VELOUR, APPLIQUED

Aldine Paper Co.
Cellusuede Products, Inc.
Dejonge & Co., Louis
Kupfer Bros. Paper Co.
Sanderson Products, Inc.
Williams & Co., Inc., Chas. W.

PAPER, WAXED

Benmont Papers Inc.
Blake, Moffitt & Towne
Central Waxed Paper Co.
Crown Zellerbach Corp.
DeJonge & Co., Louis
Dixie Wax Paper Co., Inc.
Hinkson Paper Co.
Kalamazoo Vegetable Parchment Co.
Kupfer Bros. Paper Co.
Menasha Products Co., The
Nashua Gummed & Coated Paper Co.
Newark Paraffine & Parchment Paper Co.
Paterson Parchment Paper Co.
Racquette River Paper Co., The
Riegel Paper Corp., The
St. Regis Paper Co.
Specialty Paper Co., The
Sweetnam, Inc., Geo. H.
Yorkville Paper Co., Inc.

PAPER, WOOD VENEER
(Imitation)

Aldine Paper Co.
Blake, Moffitt & Towne
Dejonge & Co., Louis
District of Columbia Paper Mills Inc.
Hampden Glazed Paper & Card Co.
Hazen Paper Co.
Hinkson Paper Co.
Holyoke Card & Paper Co.
Kupfer Bros. Paper Co.
Marvellum Co., The
Matthias Paper Corp.
Middlesex Products Co.
Nashua Gummed & Coated Paper Co.
Paper Affiliates Co. Inc.
Racquette River Paper Co., The
Royal Paper Corp.
Sanderson Products, Inc.
Sherman Paper Products Corp.
Springfield Coated Paper Corp.
Tamm & Co.
Trade Lithograph & Printing Co.
United Mfg. Co.
Williams & Co., Inc., Chas. W.
Yorkville Paper Co., Inc.

PAPER, WRAPPING
(Fancy Tissue)

Aldine Paper Co.
Benmont Papers Inc.
Chicago Printed String Co.
Crown Zellerbach Corp.
Decotone Products
Dejonge & Co., Louis
Dennison Mfg. Co.
Du-Tone Ribbon Corp.
Hampden Glazed Paper & Card Co.
Hazen Paper Co.
Hinkson Paper Co.
Kupfer Bros. Paper Co.
Marvellum Co., The
Matthias Paper Corp.
Nashua Gummed & Coated Paper Co.
Pejepscot Paper Co.
Royal Paper Corp.
Sanderson Products, Inc.
Springfield Coated Paper Corp.
Trade Lithograph & Printing Co.
United Mfg. Co.
Williams & Co., Inc., Chas. W.
Yorkville Paper Co., Inc.

PARTITIONS

Inland Container Corp.
Kress Box Co., F. J.

PLASTIC MATERIALS
(Acrylate and Methyl Methacrylate)

du Pont de Nemours & Co. Inc., E. I.
Röhm & Haas Co. Inc.

PLASTIC MATERIALS
(Casein)

American Plastics Corp.
Morrell Corp., George

PLASTIC MATERIALS
(Cast Phenol)

Bakelite Corp.
Catalin Corp.
Knoedler Co., A.
Marblette Corp.
Monsanto Chemical Co., Plastics Div.

PLASTIC MATERIALS
(Cellulose Acetate)

Bakelite Corp.
Celluloid Corp.
du Pont de Nemours & Co. Inc., E. I.
Monsanto Chemical Co., Plastics Div.
Nixon Nitration Works
Tennessee Eastman Corp.

PLASTIC MATERIALS
(Cellulose Acetate Butyrate)

Tennessee Eastman Corp.

PLASTIC MATERIALS
(Cellulose Nitrate, Pyroxylin)

Celluloid Corp.
du Pont de Nemours & Co., Inc., E. I.
Monsanto Chemical Co., Plastics Div.
Nixon Nitration Works

PLASTIC MATERIALS
(Ethylcellulose)

Dow Chemical Co., The

PLASTIC MATERIALS
(Phenol-Formaldehyde)

Bakelite Corp.
Durez Plastics & Chemicals, Inc.
Durite Plastics
General Electric Co., Plastics Dept.
Hersite & Chemicals Co.
Makalot Corp.
Monsanto Chemical Co., Plastics Div.
Reilly Tar & Chemical Corp.
Richardson Co.

PLASTIC MATERIALS
(Phenol-Furfural)

Durite Plastics

XUM

PLASTIC MATERIALS
(Styrene)

Bakelite Corp.
Catalin Corp.
Dow Chemical Co., The
Monsanto Chemical Co., Plastics Div.

PLASTIC MATERIALS
(Urea-Formaldehyde)

Bakelite Corp.
Beetle Products Div. of American Cyanamid Co.
Plaskon Co., Inc.

PLASTIC MATERIALS
(Vinyl Resin)

Monsanto Chemical Co., Plastics Div.
Union Carbide & Carbon Corp.

PRESSES, PRINTING
(Raised)

Wood, Nathan & Virkus Co. Inc.

PRESSES, ROTARY

Champlain Corp.
Cottrell & Sons Co., C. B. Claybourn Div.
Heinrich Inc., H. H.
Hooper Co., Inc., F. X.
Hulbert Engineering Corp.
Kidder Press Co., Inc.
Marconetti, Inc., A. E.
Meisel Press Mfg. Co.
Potdevin Machine Co.
Rotogravure Engineering Corp.
Rutherford Machinery Co., Div. General Printing Ink Corp.
Stokes Machine Co., F. J.
Stokes & Smith Co.

PRESSES FOR EMBOSSED SEALS

American Perforator Co., The
Ermold Co., Edward
Hulbert Engineering Corp.
Meisel Press Mfg. Co.

PRESSES, MULTI-COLOR PRINTING

Champlain Corp.
Cottrell & Sons Co., C. B., Claybourn Div.
Heinrich Inc., H. H.
Hooper Co., Inc., F. X.
Hudson-Sharp Machine Co.
Kidder Press Co., Inc.
Marconetti, Inc., A. E.
Meisel Press Mfg. Co.
Potdevin Machine Co.
Rotogravure Engineering Corp.
Rutherford Machine Co., Div. General Printing Ink Corp.
Waldron Corp., John

PRINTING
(On Bottles, Glass & Plastics)

Carr-Lowrey Glass Co.
Markem Machine Co.
Rutherford Machine Co., Div. General Printing Ink Corp.

PRESSES, PRINTING
(Aniline)

Cottrell & Sons Co., C. B., Claybourn Div.
Heinrich Inc., H. H.
Hudson-Sharp Machine Co.
Kidder Press Co., Inc.
Marconetti, Inc., A. E.
Potdevin Machine Co.
Rotogravure Engineering Corp.
Waldron Corp., John

PRESSES, PRINTING
(Letterpress)

Champlain Corp.
Cottrell & Sons Co., C. B., Claybourn Div.
Kidder Press Co., Inc.
Markem Machine Co.
Meisel Press Mfg. Co.
Potdevin Machine Co.
Rutherford Machine Co., Div. General Printing Ink Corp.

PRESSES, PRINTING
(Lithographic)

Kidder Press Co., Inc.
Rutherford Machine Co., Div. General Printing Ink Corp.

PRESSES, PRINTING
(Rotogravure)

Champlain Corp.
Cottrell & Sons Co., C. B. Claybourn Div.
Hudson-Sharp Machine Co.
Kidder Press Co., Inc.
Marconetti, Inc., A. E.
Meisel Press Mfg. Co.
Potdevin Machine Co.
Rotogravure Engineering Corp.

PRE-TIED BOWS

Stark Bros. Ribbon Corp.

PREVENTIVES, FUNGICIDES

Davison Chemical Corp., The, Silica Gel Dept.

PREVENTIVES, MOISTURE RUST, CORROSION

Davison Chemical Corp., The, Silica Gel Dept.
Maas & Waldstein Co.

PRINTING
(On Bottles, Glass & Plastics)

Carr-Lowrey Glass Co.
Coloroid Co., Inc.

PRINTING, RAISED

Wood, Nathan & Virkus Co. Inc.

PRINTING ROLLERS

Bingham Bros. Co.
Marconetti, Inc., A. E.
United States Rubber Co.

PUMPS
(Liquid)

Aldrich Pump Co., The
Allis-Chalmers Mfg. Co.
Alsop Engineering Corp.
Federal Tool Corp.
Kiefer Machine Co., The Karl
Scientific Filter Co.
U. S. Bottlers Machinery Co.

PUMPS
(Vacuum or Air Pressure)

Allis-Chalmers Mfg. Co.
New Jersey Machine Corp.
Scientific Filter Co.
Stokes Machine Co., F. J.

RIBBONS & BOWS
(Pre-tied)

See Pre-tied Bows

RIBBONS & TIES
(Cotton)

Chicago Printed String Co.
Economy Novelty & Printing Co.
Fibre Cord Co.
Freydberg Bros. Inc.
Stark Bros. Ribbon Corp.
Walser Mfg. Co., The
Yorkville Paper Co., Inc.

RIBBONS & TIES
(Extruded Plastic)

Freydberg Bros. Inc.
Stark Bros. Ribbon Corp.

RIBBONS & TIES
(Rubber Hydrochloride)

Freydberg Bros. Inc.
Stark Bros. Ribbon Corp.

RIBBONS & TIES
(Transparent Cellulose)

Dennison Mfg. Co.
Du-Tone Ribbon Corp.
Fibre Cord Co.
Freydberg Bros. Inc.
Milprint, Inc.
Nalco Inc.
Shellmar Products Co.
Stark Bros. Ribbon Corp.
Walser Mfg. Co., The
W-E-R Ribbon Corp.
Yorkville Paper Co., Inc.

ROLL LEAF
(Stamping Foil)

Griffin, Campbell, Hayes, Walsh, Inc.
Markem Machine Co.
Nashua Gummed & Coated Paper Co.
Peerless Roll Leaf Co., Inc.
Wurzburg Bros.

RULE, STEEL
(Cutting, Creasing & Perforating)

Helmold & Bro. Inc., J. F.

SAUSAGE CASINGS (Artificial)

Sylvania Industrial Corp.
Visking Corp.

SCALES, AUTOMATIC CHECK WEIGHERS

Arenco Machine Co., Inc.
Consolidated Packaging Machinery Corp.
Goat Co. Inc., The Fred
Gump Co., B. F.
Merrick Scale Mfg. Co.
Pneumatic Scale Corp., Ltd.
Stokes & Smith Co.
Toledo Scale Co.
Triangle Package Machinery Co.
Weigh Right Automatic Scale Co.

SCALES, AUTOMATIC WEIGHING, FILLING

See Machines, Filling, Dry

SCALES, FREIGHT, EXPRESS

Detecto Scales, Inc.
Exact Weight Scale Co., The
Howe Scale Co., The
Wurzburg Bros.

SCALES, OVER & UNDER WEIGHT

Arenco Machine Co., Inc.
Detecto Scales, Inc.
Exact Weight Scale Co., The
Howe Scale Co., The
LaBoiteaux Co. Inc., The
Merrick Scale Mfg. Co.
Thwing-Albert Instrument Co.
Wurzburg Bros.

SEALS

See Labels & Seals, Embossed

SAMPLE DISTRIBUTION

Western Union Telegraph Co.

SERVERS, DRIPLESS

Federal Tool Corp.

SHEETING, PLASTIC

Catalin Corp.
du Pont de Nemours & Co. Inc., E. I.
Eastman Kodak Co.
Monsanto Chemical Co., Plastics Div.
Union Carbide & Carbon Corp.

SHEETING, PLASTIC (Fluorescent)

Monsanto Chemical Co., Plastics Div.

SHIPPING CONTAINERS

See Boxes, Corrugated & Solid Fibre

SPOOLS, FIBRE

Cin-Made Corp., The
Cleveland Container Co., The
Gates Paper Co. Ltd., The
R. C. Can Co.
Ritchie & Co., W. C.
Sefton Fibre Can Co.

SPOOLS, METAL

American Can Co.
Clark Mfg. Co., J. L.
Ellis & Sons, Inc., George D.
National Can Corp.
Seymour Products Co.

SPOUTS, POURING

American Aluminum Ware Co.
American Molding Co.
Anchor Cap & Closure Corp.
Anchor Hocking Glass Corp.
Cin-Made Corp., The
Consolidated Fruit Jar Co.
Gates Paper Co. Ltd., The
Sefton Fibre Can Co.
Wirz Inc., A. H.

SPRAYERS

Double Duty Products, Inc.
Federal Tool Corp.
Food Dispenser Co., The

STAPLES, WIRE

Acme Staple Co.
Bates Mfg. Co., The
Bostitch, Inc.
Heller Co., The
Inland Container Corp.
Paslode Co.
Wurzburg Bros.

STOPPERS, RUBBER

Anchor Cap & Closure Corp.
Anchor Hocking Glass Corp.
Armstrong Cork Co.
United States Rubber Co.

STRAPPING, STEEL

Acme Steel Co.
Allegheny Ludlum Steel Corp.
Gerrard Co. Inc., The
Signode Steel Strapping Co.
Stanley Works, The
Wurzburg Bros.

STRING, PRINTED (Plain and Decorative)

Chicago Printed String Co.
Economy Novelty & Printing Co.
Fibre Cord Co.
Freydberg Bros. Inc.
Wurzburg Bros.

TAGS

Cameo Die & Label Co.
Cupples Hesse Envelope & Litho. Co.
Dennison Mfg. Co.
Economy Novelty & Printing Co.
Fox Co., The C. J.
Kaumagraph Co.
Reyburn Mfg. Co., Inc., The
Reynolds Metals Co.
Robinson Tag & Label Co.
Salisbury Mfg. Co.
Tablet & Ticket Co., The
Wurzburg Bros.

TAPE, GUMMED (Cloth)

Chicago Gum Tape Co.
Crowell Corp., The
Dennison Mfg. Co.
Eastman Kodak Co.
Fort Wayne Corrugated Paper Co.
Freydberg Bros. Inc.
Gummed Products Co., The
Gummed Tape & Devices Co.
Inland Container Corp.
Matthias Paper Corp.
McLaurin-Jones Co.
Mid-State Gummed Paper Co.
Nashua Gummed & Coated Paper Co.
Paper Affiliates Co. Inc.
Rexford Paper Co.
Reyburn Mfg. Co., Inc., The
Wurzburg Bros.

TAPE, GUMMED (Plain, Printed, Colored)

Angier Corp.
Central Paper Co.
Chicago Gum Tape Co.
Chicago Printed String Co.
Crowell Corp., The
Dennison Mfg. Co.
Economy Novelty & Printing Co.
Ever Ready Label Corp.
Fort Wayne Corrugated Paper Co.
Freydberg Bros. Inc.
Gates Paper Co. Ltd., The
Gummed Products Co., The
Gummed Tape & Devices Co.
Inland Container Corp.
Matthias Paper Corp.
McLaurin-Jones Co.
Mid-State Gummed Paper Co.
Nashua Gummed & Coated Paper Co.
Paper Affiliates Co. Inc.
Rexford Paper Co.
Reyburn Mfg. Co., Inc., The
Rotogravure Engineering Corp.
Wurzburg Bros.
Yorkville Paper Co., Inc.

TAPE, GUMMED (Transparent Cellulose)

Dennison Mfg. Co.
Gummed Tape & Devices Co.
Mason Envelope Co.
McLaurin-Jones Co.
Paper Affiliates Co. Inc.
Safeway Products Corp.
Sweetnam, Inc., Geo. H.
Wurzburg Bros.
Yorkville Paper Co., Inc.

TIN PLATE

Jones & Laughlin Steel Corp.
National Can Corp.

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BUYERS' DIRECTORY

of the Packaging Industries

TRANSPARENT MATERIALS
(Cellulose Acetate)

American Phenolic Corp.
American Products Mfg. Co.
Celluloid Corp.
Comet Envelope & Paper Co. Inc.
du Pont de Nemours & Co., Inc., E. I.
Eastman Kodak, Co.
Monsanto Chemical Co., Plastics Div.
Stensgaard & Associates, W. L.

TRANSPARENT MATERIALS
(Cellophane)

Aldine Paper Co.
Comet Envelope & Paper Co. Inc.
du Pont de Nemours & Co., Inc., E. I.
Sylvania Industrial Corp.
Yorkville Paper Co., Inc.

TRANSPARENT MATERIALS
(Ethylcellulose)

American Products Mfg. Co.
Dow Chemical Co., The

TRANSPARENT MATERIALS
(Latex for wrapping frozen foods)

Dewey & Almy Chemical Co.

TRANSPARENT MATERIALS
(Rubber Hydrochloride)

Comet Envelope & Paper Co. Inc.
Goodyear Tire & Rubber Co., The

TRANSPARENT MATERIALS
(Shredded)

Comet Envelope & Paper Co. Inc.
Sweetnam, Inc., Geo. H.
Sylvania Industrial Corp.
Yorkville Paper Co., Inc.

TRANSPARENT MATERIALS
(Vinyl Acetate)

Union Carbide & Carbon Corp.

TRANSPARENT MATERIALS
(Converters, Fabricators & Printers of Non-Rigid Sheet)

American Paper Goods Co., The
Arvey Corp.
Cellulose Packaging Corp.
Central States Paper & Bag Co.
Comet Envelope & Paper Co. Inc.
Crystal Transparent Mfg. Co. Inc.
Cupples Hesse Envelope & Litho. Co.
Daniels Mfg. Co.
Dobeckmun Co., The
Forbes Lithograph Co., The
General Laminating Co.
Holyoke Card & Paper Co.
Ivers-Lee Co.
Marvellum Co., The
Mason Envelope Co.
Menasha Products Co., The, Div. Marathon Paper Mills Co.
Milprint, Inc.
Munson Bag Co., The
Neostyle Inc.
Paramount Paper Products Co. Inc.
Print-A-Tube Co.
Royal Paper Corp.
Royal & Co., Thomas M.
Shellmar Products Co.
Tower Envelope Co.
U. S. Envelope Co.
Yorkville Paper Co., Inc.
Young Co., Everett

TRANSPARENT MATERIALS
(Converters, Fabricators & Printers of Rigid Transparent Materials)

Alderman Paper Box Corp.
Allvue Container, Inc.
Apex Paper Box Corp.
Bisler Inc., G. A.
Burt Co., Inc., F. N.
Cambridge Paper Box Co.
Cellulose Packaging Corp.
Clark Co., Inc., Geo. V.
Craftsman Label Co.
Crook Paper Box Co.
Fairchild Corp., E. E.
Flower City Specialty Co.
Forbes Lithograph Co., The
Henry, Ira L.
High Point Paper Box Co., Inc.
Hollywood Paper Box Corp.
Hygienol Co., Inc.
Lebanon Paper Box Co.
Miller Co., Inc., Walter P.
Nashua Gummed & Coated Paper Co.
Neostyle Inc.
Offset Gravure Corp.
Old Dominion Box Co.
Parfait Powder Puff Co.
Printloid, Inc.
Ritchie & Co., W. C.
Royal Paper Corp.
Schleicher Paper Box, F. J.
Schulz Co., A. Geo.
Seaman Box Co. Inc.
Sillcocks-Miller Co., The
Taylor Box Co.
Tower Envelope Co.
Transparent Specialties Mfg. Co.
U. S. Envelope Co.
Wallace Paper Box Corp.
Warner Bros. Co., The
Waterbury Paper Box Co., The
Weinman Bros.
Young Co., Everett

TUBE CLIPS

Colton, Arthur Co.

TUBES, CELLULOSE

See Vials, Cellulose

TUBES, COLLAPSIBLE
(Aluminum, Lead, Tin & Alloys)

Aluminum Co. of America
National Collapsible Tube Co.
New England Collapsible Tube Co.
Peerless Tube Co.
Standard Specialty & Tube Co.
Sun Tube Corp.
Victor Metal Products Corp.
White Metal Mfg. Co.

TUBES, COLLAPSIBLE
(Transparent Sheet)

Celluplastic Corporation
Crystal Transparent Mfg. Co. Inc.

TUBES, FIBRE

Cambridge Paper Box Co.
Canister Co., The
Carpenter Container Co. Inc.
Cin-Made Corp., The
Cleveland Container Co., The
Gardner-Richardson Co., The
Gates Paper Co. Ltd., The
Hulbert Engineering Corp.
Indianapolis Paper Container Co.
Ritchie & Co., W. C.
Sefton Fibre Can Co.
Shoup-Owens Inc.
Wolf Brothers
Wurzburg Bros.

TUBING, GLASS

See Glass, Rod & Tubing

TUMBLERS
(Glass)

Anchor Hocking Glass Corp.
Hazel-Atlas Glass Co.
Libby Glass Mfg. Co.
Owens-Illinois Glass Co.
Tygart Valley Glass Co.

VARNISHES & LACQUERS

See Lacquers & Varnishes

VIALS, CELLULOSE

Celluplastic Corporation
Lusteroid Container Co., Inc.

VIALS, GLASS

Hazel-Atlas Glass Co.
Kimble Glass Co.
Owens-Illinois Pacific Coast Co.
Pennsylvania Glass Products Co.
Wheaton Co., T. C.

VIALS, METAL

Aluminum Co. of America
American Aluminum Ware Co.
Clark Mfg. Co., J. L.
Sun Tube Corp.
Victor Metal Products Corp.

WADDING

See Padding & Wadding

WIRE, REINFORCEMENT

Acme Steel Co.
Gerrard Co. Inc., The
Jones & Laughlin Steel Corp.

WIRE, STAPLING

Acme Staple Co.
Acme Steel Co.
Bates Mfg. Co., The
Bostitch, Inc.
Heller Co., The
Inland Container Corp.
Jones & Laughlin Steel Corp.
Paslode Co.
Prentiss & Co., George W.
Wurzburg Bros.

WIRE, STITCHING

Acme Steel Co.
Bostitch, Inc.
Dexter Folder Co.
Harris-Seybold-Potter Co.
Heller Co., The
Ideal Stitcher & Mfg. Co.
Inland Container Corp.
Jones & Laughlin Steel Corp.
Paslode Co.
Prentiss & Co., George W.
Wurzburg Bros.

WIRE, STITCHING, COLORED

Acme Steel Co.
Bostitch, Inc.
Harris-Seybold-Potter Co.

WRAPPERS, BOTTLE
(Corrugated)

Fort Wayne Corrugated Paper Co.
Hinde & Dauch Paper Co., The
Keystone Box Co.
Sherman Paper Products Corp.
Yorkville Paper Co., Inc.

WRAPPERS, COMBINATION

Mason Envelope Co.
Milprint, Inc.
Neostyle Inc.
Royal & Co., Thomas M.
Sweetnam, Inc., Geo. H.

WRAPPERS, FOIL

Cameo Die & Label Co.
Craftsman Label Co.
Daniels Mfg. Co.
Forbes Lithograph Co., The
Foxon Co., The
Johnston Tin Foil & Metal Co., The
Krause, Inc., Richard M.
Milprint, Inc.
Neostyle Inc.
Reynolds Metals Co.
Rotogravure Engineering Corp.
Royal Paper Corp.
Sherman Paper Products Corp.
Warner Bros. Co., The
Wurzburg Bros.

WRAPPERS, PRINTED GLASSINE

Benmont Papers Inc.
Daniels Mfg. Co.
Dixie Wax Paper Co., Inc.
Mason Envelope Co.
Menasha Products Co., The
Milprint, Inc.
Nashua Gummed & Coated Paper Co.
Neostyle Inc.
Paramount Paper Products Co. Inc.
Riegel Paper Corp., The
Rotogravure Engineering Corp.
Royal Paper Corp.
Royal & Co., Thomas M.
Sweetnam, Inc., Geo. H.
Tower Envelope Co.
Unique Printed Products Co. Inc.
Wurzburg Bros.
Yorkville Paper Co., Inc.

WRAPPERS, TRANSPARENT

Benmont Papers Inc.
Cellulose Packaging Corp.
Comet Envelope & Paper Co. Inc.
Crystal Transparent Mfg. Co. Inc.
Daniels Mfg. Co.
Dewey & Almy Chemical Co.
Dixie Wax Paper Co., Inc.
Dobeckmun Co., The
Forbes Lithograph Co., The
Mason Envelope Co.
Menasha Products Co., The
Milprint, Inc.
Nashua Gummed & Coated Paper Co.
Neostyle Inc.
Paramount Paper Products Co. Inc.
Riegel Paper Corp., The
Rotogravure Engineering Corp.
Royal Paper Corp.
Royal & Co., Thomas M.
Shellmar Products Co.
Sweetnam, Inc., Geo. H.
Tower Envelope Co.
Westfield River Paper Co. Inc.
Wurzburg Bros.
Yorkville Paper Co., Inc.

WRAPPERS, WAXED PAPER & PARCHMENT

Benmont Papers Inc.
Central Waxed Paper Co.
Kalamazoo Vegetable Parchment Co.
Menasha Products Co., The
Milprint, Inc.
Nashua Gummed & Coated Paper Co.
Newark Paraffine & Parchment Paper Co.
Paramount Paper Products Co. Inc.
Paterson Parchment Paper Co.
Riegel Paper Corp., The
Sweetnam, Inc., Geo. H.
Wurzburg Bros.
Yorkville Paper Co., Inc.

No effort has been spared to make this Directory as complete and as accurate as possible. Nonetheless, some packagers may find needs arising for supplies, materials or equipment not here listed. In such instances, packagers are invited to avail themselves of the services of the Research Department of Modern Packaging. Inquiries—by mail, phone or wire—will receive prompt attention.

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Alderman Paper Box Corp., 31 Exchange St., Rochester, N. Y.
Aldine Paper Co., 373 Fourth Ave., New York, N. Y.
Aldrich Pump Co., The, 12 Pine Street, Allentown, Pa.
Allegheny Ludlum Steel Corp., 2319 Oliver Bldg. (22), Pittsburgh, Pa.
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American Products Mfg. Co., Oleander & Dublin Sts., New Orleans, La.
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Arvey Corp., 3462 N. Kimball Ave., Chicago, Ill.
Atlas Gum & Sizing Co., 406 Pearl St., New York, N. Y.
Ashtabula Corrugated Box Co., The, 3714 Ann Ave., Ashtabula, Ohio
Associated Attleboro Mfrs. Inc., Attleboro, Mass.
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TRADE NAME DIRECTORY

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Accent	Manicure sets	The Henkel Co., Fremont, O.
Ace	Steel strapping tightener	Stanley Works, New Britain, Conn.
Acetate Face	Bag with acetate film front and glassine back	Mason Envelope Co., New York, N. Y.
Ace-Tra	One-piece capsule metal tray	Ace Carton Corp., Cicero, Ill.
ACJ	Adhesives, starch derived	Stein, Hall Mfg. Co., Chicago, Ill.
A.C.M.	Box board, folding and display containers	American Coating Mills, Inc., Elkhart, Ind.
Acme	Machines	Acme Staple Co., Camden, N. J.
Adamant	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
Addoweight	Automatic indicating, totalizing and counting scale	Merrick Scale Mfg. Co., Passaic, N. J.
Agate Dipping	For chocolate coating	Matthias Paper Corp., Philadelphia, Pa.
Air-Flo	Bottle cleaning and filling machine	Karl Kiefer Machine Co., Cincinnati, O.
Air Line	Jar cleaning machine	Karl Kiefer Machine Co., Cincinnati, O.
Air-O-Seal	Cellophane covered coffee bag	Thomas M. Royal & Co., Philadelphia, Penna.
Ajax Glaze	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Alcoa	Aluminum Company of America products	Aluminum Company of America, Pittsburgh, Pa.
Allegheny	Stainless steel	Allegheny Ludlum Steel Corp., Pittsburgh, Pa.
Allison	Bag closing machine	B. F. Gump Co., Chicago, Ill.
Allure	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Alseco	Aluminum Seal Co. products	Aluminum Seal Co., New Kensington, Pa.
Alter-Proof	Tear-off band tamperproof	Aluminum Seal Co., New Kensington, Pa.
Alvac	Vacuum tumbler closure	Aluminum Seal Co., New Kensington, Pa.
All-Weather	Water resistant kraft	Bagpak, Inc., New York, N. Y.
Amekine	Synthetic rubber dropper nipples	Pennsylvania Glass Products Co., Pittsburgh, Pa.
American	Paper, box lace	American Lace Paper Co., Milwaukee, Wisc.
American Beauty	Box cover paper	C. R. Whiting Co., Inc., Hackensack, N. J.
Ameroid	Casein	American Plastics Corp., New York, N. Y.
Amerseal	Lug caps	Anchor Cap & Closure Corp., L. I. C., N. Y.
Amerseal	Special pouring spout with screw cap closure	Continental Can Co., New York, N. Y.
Amkleer	Cellophane bags Cellophane envelopes	American Paper Goods Co., Kensington, Conn.
Ampaco	Paper mailing boxes	H. Fleisig Inc., New York, N. Y.
Amphenol	Transparent sheet, rod and tube	American Phenolic Corp., Chicago, Ill.
Amprinko	Printing inks	American Printing Ink Co., Div. General Printing Ink Corp., Chicago, Ill.
Amsco	Bag sealer	Amsco Packaging Machinery Co., L. I. C., N. Y.
Anchor	Metal and molded closures, sealing machines and processing equipment	Anchor Cap & Closure Corp., L. I. C., N. Y.
Anchor	Metal and molded closures, sealing machines, processing equipment	Anchor Hocking Glass Corp., Lancaster, Ohio
Anchor	Steel strapping	Signode Steel Strapping Co., Chicago, Ill.
Androck	Wire display fixtures, floor and counter types	Washburn Co., Rockford, Ill.
Angle-Loc	Folding box for baked goods	The Ohio Boxboard Co., Rittman, Ohio
Apex	Steel strapping	Signode Steel Strapping Co., Chicago, Ill.
Aqualeen	Transparent cake wraps	Newark Paraffine & Parchment Paper Co., Newark, N. J.
Aquapearl	Cast phenolic pearl shades	Catalin Corp., New York, N. Y.
Aqua-Seal	Moisture resistant boxboard	The Ohio Boxboard Co., Rittman, Ohio
Arabol	Adhesive	Arabol Mfg. Co., New York, N. Y.
Araflex	Adhesive	Arabol Mfg. Co., New York, N. Y.
Aratex	Adhesive	Arabol Mfg. Co., New York, N. Y.
Arenco	Packaging machines	Arenco Machine Co., Inc., New York, N. Y.
Argent Silver Print	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Argette	Box paper	Kupfer Bros. Co., New York. N. Y.
Aristo	Confectionery bags	American Paper Goods Co., Kensington, Conn.
Aristocrat	Folding paper boxes	Edwin J. Schoettle Co., Philadelphia, Pa.
Aristocrat	Wax-lined food tray	Sutherland Paper Co., Kalamazoo, Mich.
Artboxtone	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Artcote	Pyroxylin metallic coated papers	Artcote Papers, Inc., Irvington, N. J.
Art-Craft	Fancy embossed paper	Springfield Coated Paper Corp., Camden, N. J.
Artex	Leather substitute paper	Bradner Smith & Co., Chicago, Ill.
Art Finished Pastels	Box covering paper	Chas. W. Williams & Co., Inc. New York, N. Y.
Art Floral	Brightwood kid finish papers	Holyoke Card & Paper Co., Springfield, Mass.
Art Gingham	Brightwood kid finish papers	Holyoke Card & Paper Co., Springfield, Mass.
Artillery	Box cover	District of Columbia Paper Mills Inc., Washington, D.C.
Artmold	Molded plastic caps	Armstrong Cork Co., Lancaster, Penna.
Art Pastels	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Ashmaster	Ash tray	Owens-Illinois Glass Co., Toledo, O.
Asphaltite	Board impregnated with odorless asphaltum	National Container Corp. Long Island City, N. Y.
Atlasol	Pastes and glues	Atlas Gum & Sizing Co., New York, N. Y.
Aulcoid	Industrial finishes	Ault & Wiborg Corp., New York, N. Y.
Aulfex	Industrial finishes	Ault & Wiborg Corp., New York, N. Y.
Aulspar	Industrial finishes	Ault & Wiborg Corp., New York, N. Y.
Aultone	Industrial finishes	Ault & Wiborg Corp., New York, N. Y.
Autoclench	Stapler	Bostitch, Inc., East Greenwich, R. I.
Autokrat	Collapsible paper boxes	Edwin J. Schoettle Co., Philadelphia, Pa.
Baby Bunting	Nursery sets	Owens-Illinois Glass Co., Toledo, O.
Babytone	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Bagpak	Multi-wall paper bag filling and closing equipment	Consolidated Packaging Machinery Corp., Buffalo, N. Y.
Bagpakers	Bag filling machinery	Bagpak, Inc., New York, N. Y.
Bakelite	Acetate, phenolic, polystyrene, urea, molding materials, also cast resins	Bakelite Corp., New York N. Y.
Ballyhoo	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Barkstone	Imitation cork box covers	District of Columbia Paper Mills Inc., Washington, D.C.
Bar-Nun	Weighing machines	B. F. Gump Co., Chicago, Ill.
Barque	Print box paper	The Marvellum Co., Holyoke, Mass.
Barr-Kap	Bar use caps	Aluminum Seal Co., New Kensington, Pa.
Barroll Nozzle	Special nozzle with screw closure	Continental Can Co., New York, N. Y.
"B" Brand	Tin cans and closing machines	National Can Corp., New York, N. Y.
Beacon	Inturned lug caps	Anchor Cap & Closure Corp., L. I. C., N. Y.
Beauty Kit	Travel kit	Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.
Beau Tye	Decorative tying ribbon made of cotton	Freydberg Bros., Inc., Stamford, Conn.
Bedford Cord	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Beetle	Urea-formaldehyde plastic	Beetle Prods. Div. of American Cyanamid Co., New York, N. Y.
Bells and Stars	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Bendall	Attachment for steel rule bender	J. F. Helmold & Bro., Inc., Chicago, Ill.
Ben Mont	Gift wrappings, tissues, glassine bags, shredded waxed papers	Ben Mont Papers, Inc., Bennington, Vt.
Ben Mont Mastercraft	Gift wrappings, tissues, glassine bags, shredded waxed papers	Ben Mont Papers, Inc., Bennington, Vt.
Bergmann	Conveyor switches Ice cream fillers	Horix Mfg. Co., Pittsburgh (4), Penna.
Big Chief	Glass bottles	Owens-Illinois Glass Co., Toledo, O.
Birch	Box cover	District of Columbia Paper Mills Inc., Washington, D. C.
Birchette	Box paper	Kupfer Bros. Co., New York, N. Y.
Blackbird Embossed	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Blacktone	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
Blanchette	Box paper	Kupfer Bros. Co., New York, N. Y.
Bliss	Wire stitchers	Dexter Folder Co., New York, N. Y.
Bliss	Solid fibreshipping containers	Robert Gair Co., Inc., New York, N. Y.

XUM

TRADE NAME DIRECTORY

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Block Board	Heavy pressed board signs	Chaspec Mfg. Co., New York, N. Y.
Blossomtime	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Blum	Testing machines	The LaBoiteaux Co., Inc., Cincinnati, Ohio
Bond	Gross weighing and filling machines	U. S. Automatic Box Machinery Co., Inc., Roslindale, Boston, Mass.
Bond-Crowns	Crowns for beverage bottles and cans	Bond Mfg. Corp., Inc., Wilmington, Del.
Bo-Seals	Pre-tied, Cellulose Bows	Stark Bros. Ribbon Corp., New York, N. Y.
Bostitch	Stapling and stitching machines	Bostitch, Inc., East Greenwich, R. I.
Bostitch	Wire stitchers	Dexter Folder Co., Pearl River, N. Y.
Boston	Wire stitchers	Dexter Folder Co., Pearl River, N. Y.
Bouquet	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Boxcrafters	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Brad-Tite	Specialty wrappers for bread and food	Dixie Wax Paper Co., Inc., Dallas, Texas
Brazilian	Box paper	Bradner Smith & Co., Chicago, Ill.
Brighten Leaf	Roll leaf	Griffin, Campbell, Hayes, Walsh, Inc., New York, N.Y.
Bright Spots	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Brightwood	Box covering paper	Holyoke Card & Paper Co., Springfield, Mass.
Brightwood	Paper box making machine	U. S. Automatic Box Machinery Co., Inc., Roslindale, Boston, Mass.
Brightwood Cameo	Box cover paper	Holyoke Card & Paper Co., Springfield, Mass.
Brightwood Polychrome	Box covering paper	Holyoke Card & Paper Co. Springfield, Mass.
Brightwood Sateens	Box covering paper	Holyoke Card & Paper Co., Springfield, Mass.
Brilliant Metallics	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Britecote	Paper stock	Brooks Bank Note Co., Springfield, Mass.
Broadside	Folding carton	Robert Gair Co., Inc., New York, N. Y.
Brocade	Printed embossed paper	Hampden Glazed Paper & Card Co., Holyoke, Mass.
Broken Back	Patented display container	Brooks Bank Note Co., Springfield, Mass.
Bronzoid	Embossed signs	Chaspec Mfg. Co., New York, N. Y.
Brooks Twin	Double unit display container	Brooks Bank Note Co., Springfield, Mass.
Bruno	Semi-automatic can filling machine	The Vol-U-Meter Co., Buffalo, N. Y.
Brunswick Homespuns	Paper for box coverings	Pejepscot Paper Co., New York, N. Y.
Buckskin	Kraft lined boxes	Morris Paper Mills, Chicago, Ill.
Bulkbinding	Steel strapping	Signode Steel Strapping Co., Chicago, Ill.
Bunn	Tying machines	B. H. Bunn Co., Chicago, Ill.
Burlabox	Export water resistant containers	National Container Corp., Long Island City, N. Y.
Burt	Labeling and case packing machines	Burt Machine Co., Baltimore, Md.
C & D	Junior case printer	Ideal Stitcher & Mfg. Co., Racine, Wisc.
Camachine	Slitting, winding and laminating machines	Cameron Machine Co., Brooklyn, N. Y.
Camel Brand	Corrugated containers	Ashtabula Corrugated Box Co., The, Ashtabula, Ohio
Cameoflex	Iridescent label printing process	Cameo Die & Label Co., New York, N. Y.
Cameron	Can making machinery	Cameron Can Machinery Co., Chicago, Ill.
Camlet	Two-tone embossed paper	Springfield Coated Paper Corp., Camden, N. J.
Canco	Miscellaneous tin cans and containers	American Can Co., New York, N. Y.
Candy Stripes	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Canno	Belt conveyor	Karl Kiefer Machine Co., Cincinnati, O.
Canvas	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
CaPeM	Capping machines	Consolidated Packaging Machinery Corp., Buffalo, N. Y.
Carnival	Embossed foil box papers	Hazen Paper Co., Holyoke, Mass.
Carpenter	Fibre drums	Carpenter Container Co., Inc., Brooklyn, N. Y.
Carry-Safe	Egg carton	Self-Locking Carton Co., Chicago, Ill.
Caseal	Closure	Owens-Illinois Glass Co., Toledo, O.
Catalin	Cast phenolic plastic	Catalin Corp., New York, N. Y.
CCS	Crown corks	Crown Cork & Seal Co., Baltimore, Md.
Ceco	Carton and container sealing machines	Container Equipment Corp., Newark, N. J.
Cedar	Woodgrain box papers	Hazen Paper Co., Holyoke, Mass.
Cello	Cellophane ribbon	Freydberg Bros., Inc., Stamford, Conn.
Cello-Face	Bag with cellophane front and glassine back	Mason Envelope Co., New York, N. Y.
Cello-Safe	Cellophane lollypop sticks	Fibre Cord Co., New York, N. Y.
Cellosheen	Super-transparent glassine	Deerfield Glassine Co., Monroe Bridge, Mass.
Cellucolor	Wrappers	Shellmar Products Co., Mt. Vernon, Ohio
Cellu-Gums	Adhesives for gluing transparent sheeting	National Adhesives, Div. National Starch Products, Inc., New York, N. Y.
Cellulin	Wrappers	Shellmar Products Co., Mt. Vernon, Ohio
Celluloid	Cellulose nitrate (pyroxylin)	Celluloid Corp., New York, N. Y.
Cell-U-Print	Varnished bags	Thomas M. Royal & Co., Philadelphia, Penna.
Cellusuede	Flock paper	Stevens-Nelson Paper Corp., New York, N. Y.
Cellusuede	Velour paper	Cellusuede Products, Inc., Rockford, Ill.
Celolustre	Box coating	National Metal Edge Box Co., Philadelphia, Pa.
Celonite	Cellulose nitrate plastic sheeting	Monsanto Chemical Co., Plastics Div., Springfield, Mass.
Cel-O-Seal	Cellulose caps and bands	Armstrong Cork Co., Lancaster, Penna. E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Celowax	Waxed sulphite	Riegel Paper Corp., New York N. Y.
Cel-Spar	Box covering papers	Paper City Mfg. Co., Inc., Holyoke, Mass.
Cem	Bottling machinery	The Crown Cork & Seal Co., Baltimore, Md.
Cemac	Bottling machinery	The Crown Cork & Seal Co., Baltimore, Md.
Cemco	Bottling machinery	The Crown Cork & Seal Co., Baltimore, Md.
Century	Carton gluer	E. G. Staude Mfg. Co., St. Paul, Minn.
Certified	Paper doilies	U. S. Lace Paper Works, Inc., Brooklyn, N. Y.
Challenger	Cellulose window gluing machine	E. G. Staude Mfg. Co., St. Paul, Minn.
Challis Print	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Chambon	Automatic printing machinery	Chambon Corp., Garfield, N. J.
Chameleon	Leatherette paper	Springfield Coated Paper Corp., Camden, N. J.
Champion	Envelope mfg. machine	F. L. Smith Machine Co., Inc., New York, N. Y.
Champion	Adjustable shell making machine	E. G. Staude Mfg. Co., St. Paul, Minn.
Champlain	Automatic printing machinery Printing cylinders Engravings	Chambon Corp., Garfield, N. J.
Champlain	Printing machinery	Champlain Corp., Garfield, N. J.
Chastik	Adhesive backing	Chaspec Mfg. Co., Inc., New York, N. Y.
Chatoye	Pyroxylin treated box papers	Plastic Coating Corp., Holyoke, Mass.
Check-Weigher	Automatic check-weighing scale	Merrick Scale Mfg. Co., Passaic, N. J.
Cheerio	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Cheviot	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Chevron Print	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Chick Pullman	Corrugated chick shipping containers	Inland Container Corp., Indianapolis, Ind.
Chilton	Metal inlaying in plastics	Plastic Inlays, Inc., Summit, N. J.
Christmas Candle	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Cinati	Liquid bottling machine	Karl Kiefer Machine Co., Cincinnati, O.
Cinati Junior	Liquid bottling machine	Karl Kiefer Machine Co., Cincinnati, O.
Cin-Made	Fibre cans	Cin-Made Corp., The, Cincinnati, Ohio
Circle "A"	Molded and metal caps and corks and glass containers	Armstrong Cork Co., Lancaster, Penna.
Citrustrap	Steel strapping	Acme Steel Co., Chicago, Ill.
Clearit	Asbestos	Scientific Filter Co., New York, N. Y.
Clearseal	Heat sealing glassine	Hartford City Paper Co., Hartford City, Ind.

XUM

TRADE NAME DIRECTORY

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Clearseal	Thermoplastic coated acetate	General Laminating Co., New York, N. Y.
Clearsite	Cellulose vials, containers and specialties	Hygienic Tube & Container Corp., Newark, N. J.
Clearsite	Odorless unbreakable containers, tubes and vials	Celluplastic Corp., Newark, N. J.
Clearview	Cellophane bags	Equitable Paper Bag Co., Inc., Long Island City, N. Y.
Cleveco	Lined fibre can	Cleveland Container Co., New York, N. Y.
Climax	Bottle wrappers	Hinde & Dauch Paper Co., Sandusky, O.
Coach and Four	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Code-O-Matic	For code or control number printing	New Jersey Machine Corp., Hoboken, N. J.
Colodense	Wrappers	Shellmar Products Co., Mt. Vernon, Ohio
Colorama	Pyroxylin box papers	Hazen Paper Co., Holyoke, Mass.
Colorettes	Cellophane flower pot wrappers	The Dobeckmun Co., Cleveland, O.
Colorgraphic	Transparent signs and calendars	The U. S. Printing & Litho. Co., Cincinnati, O.
Coloroid	Applied finishes to bottles and jars	Coloroid Co., Inc., Cleveland, Ohio
Color-Pak	Colored shipping containers and floor displays	The U. S. Corrugated-Fiber Box Co., Indianapolis, Ind.
Colorstitch	Colored stapling and stitching wire	Acme Steel Co., Chicago, Ill.
Col-O-Tex	Imitation or artificial leather	Columbus Coated Fabrics Corp., Columbus, Ohio
Colt Air	Insulated containers	Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.
Coltjems	Semi-precious stones (plastics)	Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.
Coltrock	Phenol formaldehyde molding compound	Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.
Columbus	Overweight - underweight scales	The Exact Weight Scale Co., Columbus, Ohio
Comet	Sealing tapes Box stays	McLaurin-Jones Co., Brookfield, Mass.
Comet	Out-folding carton gluer	E. G. Staude Mfg. Co., St. Paul, Minn.
Common Sense	Jars and bottles	Owens-Illinois Glass Co., Toledo, O.
Complete Satintone	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Complimentary Print	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Concora	Linerboard and boxboard	Container Corp. of America, Chicago, Ill.
Congo	Boxes and shipping cartons Casein metallic box papers	Hazen Paper Co., Holyoke, Mass.
Conomee	Box cover paper	Matthias Paper Corp., Philadelphia, Pa.
Conservettes	Cellophane corsage containers	The Dobeckmun Co., Cleveland, O.
Consolidated	Powder fillers	Consolidated Packaging Machinery Corp., Buffalo, N. Y.
Constant	Printing inks	American Printing Ink Co., Div. General Printing Ink Corp., Chicago, Ill.
Container Slotter	Corrugated container slotter and creaser	E. G. Staude Mfg. Co., St. Paul, Minn.
Continental Gloss	Glossed and embossed printing papers	Keller-Dorian Paper Co., New York, N. Y.
Cord-Sheen	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Cordurette	Imitation cloth paper	C. R. Whiting Co., Inc., Hackensack, N. J.
Corkrusta	Imitation cork paper	C. R. Whiting Co., Inc., Hackensack, N. J.
Corktec	Box paper that simulates sheet cork	Paper Affiliates Co. Inc., New York, N. Y.
Cork-Tex	Cork liners for crowns	Bond Mfg. Corp., Inc., Wilmington, Del.
Corley-Miller	Wrapping and sheeting machines	Miller Wrapping & Sealing Machine Co., Chicago, Ill.
Corrodek	Colored corrugated liners and trays	Sherman Paper Products Corp., Newton Upper Falls, Mass.
Corruflex	Display packages	Waldorf Paper Products Co., St. Paul, Minn.
Corseal	Roll-on tamperproof over cork closure	Aluminum Seal Co., New Kensington, Pa.
Cotacord	Decorative tying cord—plastic covered	Freydberg Bros. Inc., Stamford, Conn.
Cottonluxe	Anti-tarnish cotton-lined paper and flannel bags, envelopes and containers	Cottonluxe Mfg. Co., New York, N. Y.
Cottrell-Heinrich	Multi-color aniline printing presses	H. H. Heinrich, Inc., New York, N. Y.
Cradle	Nursing bottles	Owens-Illinois Glass Co., Toledo, O.
Cresco	Printing inks	Crescent Ink & Color Co. of Pa., Philadelphia, Penna.
Crestone	Aniline ink	Crescent Ink & Color Co. of Pa., Phila., Pa.
Crest-Sheen	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Cretan-Sheen	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Cretonne	Printed box paper	The Marvellum Co., Holyoke, Mass.
Crinkle-Tie	Cotton tying materials	Chicago Printed String Co., Chicago, Ill.
Cripseal	Closure	Owens-Illinois Glass Co., Toledo, O.
Cross-Stitch	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Crown	Closures, caps, cans	Crown Cork & Seal Co., Baltimore, Md.
Crown	Metal closures	The Crown Cork & Seal Co., Baltimore, Md.
Cry-O-Vac	Protective wrap for frozen foodstuffs	Dewey & Almy Chemical Co. Cambridge B, Mass.
Cryptic	Printing inks	Crescent Ink & Color Co. of Pa., Philadelphia, Penna.
Crystal	Asbestos	Scientific Filter Co., New York, N. Y.
Crystal	Coated box coverings	McLaurin-Jones Co., Brookfield, Mass.
Crystallon	Mother-of-pearl box paper and cardboard	Riegel Paper Corp., New York, N. Y.
Crystal-Pak	Rigid cellulose containers	Transparent Specialties Mfg. Co., Cleveland, O.
Crystalustre	Paper lacquer	Maas & Waldstein Co., Newark, N. J.
Cumberland	Box covering and printing papers	S. D. Warren Co., Boston, Mass.
Cuplette	Box paper	Kupfer Bros. Co., New York, N. Y.
Cup-Paks	Paper drinking cups	Dixie-Vortex Co., Easton, Pa.
Cushion Stitch	Siftproof and moisture-proof bag closure	Bagpak, Inc., New York, N. Y.
Dacro	Metal Milk Bottle Caps, Coverall	Crown Cork & Seal Co., Baltimore, Md.
Daka-Ware	Molded plastic containers, etc.	Harry Davies Molding Co., Chicago, Ill.
Damask	Embossed paper	Hampden Glazed Paper & Card Co., Holyoke, Mass.
Danagh	Counter displays	Robertson Paper Box Co., Inc., Montville, Conn.
Dan-D-Pak	Printed transparent wraps	Daniels Mfg. Co., Rhinelander, Wisc.
Darex	Thermoplastic Coating Sealing Compounds	Dewey & Almy Chemical Co., Cambridge B, Mass.
Daysette	Box Paper	Kupfer Bros. Co., New York, N. Y.
Decalabels	Decalcomanias	Dennison Mfg. Co., Framingham, Mass.
Deco Baskets	Paper tills	Waldorf Paper Products Co., St. Paul, Minn.
Deco Board	Decorated board	Waldorf Paper Products Co., St. Paul, Minn.
Deco Boxes	Decorated boxes	Waldorf Paper Products Co St. Paul, Minn.
Deerflex	Supercalendered sulphite	Deerfield Glassine Co., Monroe Bridge, Mass.
Defender	Steel strapping	Signode Steel Strapping Co., Chicago, Ill.
Deko-Art	Colored and embossed foil	Reynolds Metals Co., Richmond, Va.
Deltaseal	Bag with pouring spout	Bemis Bro. Bag Co., St. Louis, Mo.
Dependon	Box stays	McLaurin-Jones Co., Brookfield, Mass.
Design Craft	Display sets—corrugated	Sherman Paper Products Corp., Newton Upper Falls, Mass.
Detecto	Scales	Detecto Scales Inc., Brooklyn, N. Y.
Detecto-Gram	Scales	Detecto Scales Inc., Brooklyn, N. Y.
Detecto-Matic	Scales	Detecto Scales Inc., Brooklyn, N. Y.
Dewalco	Labeling adhesives	Dewey & Almy Chemical Co., Cambridge B, Mass.
Diacell	Filter	Karl Kiefer Machine Co., Cincinnati, O.
Diafane	Lacquered glassine	Riegel Paper Corp., New York, N. Y.
Diagonals	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Dignity Cheviot	Paper for box coverings	Pejepscot Paper Co., New York, N. Y.
Disco	Imitation fabrics and wood grains	District of Columbia Paper Mills Inc., Washington, D. C.
Dispersite	Artificial dispersion of crude, reclaimed and synthetic rubbers	Dispersions Process, Inc., New York, N. Y.
Displayettes	Die-cut and embossed metallic foil display pieces	Dennison Mfg. Co., Framingham, Mass.
Display-O	Window bags	Thomas M. Royal & Co., Philadelphia, Penna.
Displayologist	Designers	Everett Young Co., Providence R. I.
Dixie	Carton blanking machine	E. G. Staude Mfg. Co., St. Paul, Minn.
Dixie Cups	Paper drinking cups and containers	Dixie-Vortex Co., Easton, Pa.

XUM

TRADE NAME DIRECTORY

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
D-O-K	Waxed kraft paper	Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
Dolite	Cartons and boxes	The Dobeckmun Co., Cleveland, O.
Domino Sheen	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Domore	Automatic processing machines	Wood, Nathan & Virkus Co., Inc., New York, N. Y.
Doplex	Cellulose acetate laminated to plain or printed paper Laminated cartons	The Dobeckmun Co., Cleveland, O.
Doplex Brilliant	Waterproof paper	The Dobeckmun Co., Cleveland, O.
Dotted Swiss	Box papers	Hazen Paper Co., Holyoke, Mass.
Doubledge	Cellophane wrapper with double thick ends	The Dobeckmun Co., Cleveland, O.
Double Duty	Wire-handle paper pail (locktop)	Sutherland Paper Co., Kalamazoo, Mich.
Double Plate	Filter	Karl Kiefer Machine Co., Cincinnati, O.
Doubleton	Printing inks	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
Dowicides	Germicides-fungicides	The Dow Chemical Co., Midland, Mich.
Drawlene	Industrial finishes	Ault & Wiborg Corp., New York, N. Y.
Dripcut	Syrup dispensers	Na-Mac Products Corp., Los Angeles, Calif.
Dry-Hesive	Masking tape	Gummed Tape & Devices Co., Brooklyn, N. Y.
Dukutone	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Dull Coat	Casein coated papers	The Marvellum Co., Holyoke, Mass.
Dullset	Inks	Geo. H. Morrill Co., Div. General Printing Ink Corp., New York, N. Y.
Dundee Fabrics	Box cover paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Dundee Plaid	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Duo-Blo	Bottle and jar cleaning machine	Karl Kiefer Machine Co., Cincinnati, O.
Duo-Piston	Filling machine for viscous materials	Karl Kiefer Machine Co., Cincinnati, O.
Duo-Sheen	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Duplex	Labeling machines and accessories	Liquid Carbonic Corp., Chicago, Ill.
Duplex	Lug cap	National Seal Corp., Brooklyn, N. Y.
Duplex	Shipping-display boxes	The Hinde & Dauch Paper Co., Sandusky, Ohio
Duranol	Transparent boxes Advertising displays	Joseph H. Meyer Bros., New York, N. Y.
Durapak	Parchmentized kraft	Paterson Parchment Paper Co., Bristol, Pa.
Duratite	Tin printing ink	Crescent Ink & Color Co. of Pa., Phila., Pa.
Durawhite	Boxboard	Paper Package Co., Indianapolis, Ind.
Durez	Phenolic molding compounds	Durez Plastics and Chemicals, Inc., North Tonawanda, N. Y.
Durite	Phenol-furfural, Phenol-formaldehyde heat-setting molding compositions	Durite Plastics, Philadelphia, Pa.
Du-Tone	Triple Edge cellophane ribbons Chenille and tinsel pointed gift wraps	Du-Tone Ribbon Corp., New York, N. Y.
Dux Bak	Waxed kraft	Central Waxed Paper Co., Chicago, Ill.
E. Z. Tearstrip	Paraffined containers	Mono Service Co., Newark, N. J.
Eagloss	Gloss printing inks	Eagle Printing Ink Co., Div. General Printing Ink Co., New York, N. Y.
Eastertone	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Easy Lift	Combination paper bag closure and handle	Consolidated Packaging Machinery Corp., Buffalo, N. Y.
Economy	Mailing bags	Bemis Bro. Bag Co., St. Louis, Mo.
Economy	Fibre drums	Carpenter Container Co., Inc., Brooklyn, N. Y.
Economy Mailer	Mailing box	The Mason Box Co., Attleboro Falls, Mass.
Economy Packager	Carton sealer and weigher	Triangle Package Machinery Co., Chicago, Ill.
Econopac	Specialty wraps	Milprint, Inc., Milwaukee, Wis.
Edtbauer-Duplex	Net weigher machines	B. F. Gump Co., Chicago, Ill.
Egyptian	Paper lacquers	The Egyptian Lacquer Mfg. Co., New York, N. Y.
Electrifugal	Liquid pumps	Allis-Chalmers Mfg. Co., Milwaukee, Wisc.
Elec-Tri-Pak	Electric weigher	Triangle Package Machinery Co., Chicago, Ill.
Electro Tempered	Bottles	Owens-Illinois Glass Co., Toledo, O.
Ellisco	Cans and metal containers	George D. Ellis & Sons, Inc., Philadelphia, Pa.
Elmendorf	Tearing tester	Thwing-Albert Instrument Co., Philadelphia, Pa.
Embrite	Suede box paper	The Marvellum Co., Holyoke, Mass.
Empeco	Housefurnishing ware	National Can Corp., New York, N. Y.
Enamelette	Pyroxylin papers	C. R. Whiting Co., Inc., Hackensack, N. J.
Endweld	Tube filling and sealing machine	Karl Kiefer Machine Co., Cincinnati, O.
Engineered Precision	All Gardner - Richardson products	Gardner-Richardson Co., Middletown, O.
Engradel	Transparent decalcomania label	Palm, Fechteler & Co., New York, N. Y.
Essyew	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
Ethocel	Ethyl cellulose for lacquers	The Dow Chemical Co., Midland, Mich.
Ethocel	Ethylcellulose molding compound	Dow Chemical Co , Midland, Mich.
Ethocel Plastic Granules	Ethyl cellulose molding granules	The Dow Chemical Co., Midland, Mich.
Ethofoil	Transparent Ethylcellulose sheeting	Dow Chemical Co., Midland, Mich.
Ethofoil	Transparent sheeting	The Dow Chemical Co., Midland, Mich.
Eureka	Rule press Bendall attachment	J. F. Helmold & Bro., Inc., Chicago, Ill.
Everyday	Printing inks	International Prtg. Ink Div. of Interchemical Corp., New York, N. Y.
Every Use	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Exact Weight	Check-weighing scales	Exact Weight Scale Co., Columbus, O.
Excell-O	Cellophane ribbon	Freydberg Bros. Inc., Stamford, Conn.
Excell-O	Printed cellulose ribbon	Freydberg Bros. Inc., New York, N. Y.
Executive	Lacquered wood grains, plain and embossed boxcovers	District of Columbia Paper Mills Inc., Washington, D. C.
Executive Velour	Suede finish	District of Columbia Paper Mills Inc., Washington, D. C.
Eye-Petized	Illustrations of prepared food labels	The United States Printing & Lithograph Co., Cincinnati (Norwood), Ohio
EZ	Hand operated air cleaner	U. S. Bottlers Machinery Co., Chicago, Ill.
E-Z-Pac	Cellulose bags	U. S. Envelope Co., Springfield, Mass.
FMC	Canning machinery	Food Machinery Corp. Sprague-Sells Div., Hoopeston, Ill.
Fabkote	Case coverings	E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Fabrikoid	Artificial leather	E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Fairette	Box paper	Kupfer Bros. Co., New York, N. Y.
Falco	Inks	Fuchs & Lang Mfg. Co., Div. General Printing Ink Corp., New York, N. Y.
Fanfare	Box covering paper	Chas. W. Williams & Co., Inc., New York N. Y.
Fast to Light	Flint glazed papers	Wyomissing Glazed Paper Co., Reading, Pa.
FCC	Cellophane cord	Fibre Cord Co., New York, N. Y.
FCC Two-Tone	Cellophane ribbons	Fibre Cord Co., New York, N. Y.
Fernwood	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Fiberpak Drum	Fibre drum	The Container Co., Van Wert, Ohio
Fibestos	Cellulose acetate molding compound	Monsanto Chemical Co., Plastics Div., Springfield, Mass.
Fibo-Bilt	Die-cut display material	Badger Merchandising Displays, Inc., Milwaukee, Wisc.
Fibo-Board	Special heavy mounting board	Badger Merchandising Displays, Inc., Milwaukee, Wisc.
Fibre Lite	Card stock	Waldorf Paper Products Co., St. Paul, Minn.
Fill-Freeze	Cartons	Container Corp. of America, Chicago, Ill.
Filma-Seal	Innerseal covering mouth of bottle	Ferdinand Gutmann & Co., Brooklyn, N. Y.
Fine-Sheen	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Fitchco	Board lining and paper	Fitchburg Paper Co., Fitchburg, Mass.
Flashdri	High speed rotary printing inks	Fred'k H. Levey Co., Inc., New York, N. Y.
Flash Foils	Fancy paper	Louis Dejonge & Co., New York, N. Y.

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TRADE NAME DIRECTORY

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Flat-Tin-Can	Foil lined envelope	Berkowitz Envelope Co., Kansas City, Mo.
Flat-Top	Conveyor chain	Link-Belt Co., Chicago, Ill.
Flav-O-Tainer	Airtight coffee bag	Thomas M. Royal & Co., Philadelphia, Penna.
Fleetfold	Moistureproof - greaseproof tray	Sutherland Paper Co., Kalamazoo, Mich.
Fleurette	Box paper	Kupfer Bros. Co., New York, N. Y.
Flexi-Cap	Liquid and powder dispensing closures	Double Duty Products, Inc., Cleveland, Ohio
Flexi-Cartons	Paper bags	Bemis Bro. Bag Co., St. Louis, Mo.
Flexo-Flint	Laminating paper for folding box board	Matthias Paper Corp., Philadelphia, Pa.
Flipseal	Resealing vacuum and friction closure	The Aridor Co., Chicago, Ill.
Flipseal "H"	Hermetic reseal cap	Aridor Co., The, Chicago, Ill.
Flipseal "V"	Reseal vacuum cap	Aridor Co., The, Chicago, Ill.
Floradora	Lace box papers	Hazen Paper Co., Holyoke, Mass.
Flossine	Padding paper-glassine backed	George H. Sweetnam, Inc., Cambridge, Mass.
Flowers and Frills	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Flowers and Ribbon	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Foilette	Box paper	Kupfer Bros. Co., New York, N. Y.
Foil Sea Shell Swirl	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Foilsman	Foil papers	C. R. Whiting Co., Inc., Hackensack, N. J.
Foldomatic	Folding box	The Interstate Folding Box Co., Middletown, O.
Fold-Pak	Shipping cartons	Container Corp. of America, Chicago, Ill.
Foldtite	Mailing box	The C. J. Fox Co., Providence, R. I.
Food Pack	Plain cellophane bags	Food Packaging, Inc., Milwaukee, Wisc.
Food-Paks	Drinking containers	Dixie-Vortex Co., Easton, Pa.
Force	Machine for numbering cases or cartons	Wm. A. Force & Co. Inc., Brooklyn, N. Y.
Foxocals	Decalcomania transfers	The Foxon Co., Providence, R. I.
Foxon	Labels, tags, seals	The Foxon Co., Providence, R. I.
Fra-Pac	Ice cream package	Bloomer Bros. Co., Newark Wayne Co., New York State
Fresheen	Waxed bags	Dixie Wax Paper Co., Inc., Dallas, Texas
Frigid Board	Cold storage stock	Waldorf Paper Products Co., St. Paul, Minn.
Frost-Sheen	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Full-Flow	Metal liquid shipping container	Wheeling Corrugating Co., Wheeling, W. Va.
Full-View	Box window top	W. H. Deisroth Co., Inc., Phila., Pa.
Fusedge	Ribbon made of cut sealed acetate fabric	Freydberg Bros., Inc., Stamford, Conn.
GB 2 Press	Stamping machine	Griffin, Campbell, Hayes, Walsh, Inc., New York, N. Y.
Gale	Casein	George Morrell Corp., Muskegon Hts., Mich.
Gator Hide	Kraft paper	George & Sherrard Paper Co., New York, N. Y.
General	Box gluing machine	E. G. Staude Mfg. Co., St. Paul, Minn.
Georgian Silver	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
Gift Shop	Box covering paper	Charles W. Williams & Co., Inc., New York, N. Y.
Globular	Embossed parchment	George H. Sweetnam, Inc., Cambridge, Mass.
Glo-Ray	Printing inks	International Prtg. Ink Div. of Interchemical Corp., New York, N. Y.
Glorette	Box paper	Kupfer Bros. Co., New York, N. Y.
Gloss Colorcote	Color gloss surface for packaging	Brooks Bank Note Co., Springfield, Mass.
Glosscote	Boxboard	Brooks Bank Note Co., Springfield, Mass.
Glostone	Box covering paper	Paper City Mfg. Co., Inc., Holyoke, Mass.
Glostone	Printing inks	American Printing Ink Co., Div. General Printing Ink Corp., Chicago, Ill.
Gloswite	Patent coated boxboard	Brooks Bank Note Co., Springfield, Mass.
Glow-Cote	Transparent top sizing for labels and wraps	Cambridge Paper Box Co., Cambridge, Mass.
Goldentone	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Gold Seal	Cap compound Tin paste Cover compound Drum compound	Dewey and Almy Chemical Co., Cambridge B, Mass.
Goldy	Bottle closure	Aluminum Seal Co., New Kensington, Penna.
Go Safe Mailers	Mailing boxes	Everett Young Co., Providence, R. I.
Graywire	Display racks	The Gray Wire Specialty Co., Cleveland, O.
Greasene	Grease resistant boxboard	Gardner-Richardson Co., Middletown, O.
Greasetite	Bakery package board	Waldorf Paper Products Co., St. Paul, Minn.
Green Core	Gummed cloth tapes	Mid-States Gummed Paper Co., Chicago, Ill.
Greystone	Clasp envelopes	American Paper Goods Co., Kensington, Conn.
Grip-Tight	Label paste for tin, metals	Paisley Products Inc., Chicago, Ill.
Grip-Tite	Tape, gummed	Chicago Gum Tape Co., Chicago, Ill.
Grizzlybear	Waterproofstretchable wrapping paper	Angier Corp., Framingham, Mass.
Guardian	Tamper proof aluminum bottle closures	Guardian Safety Seal Co., Chicago, Ill.
Gumcraft	Gummed paper and tape	Gummed Tape & Devices Co., Brooklyn, N. Y.
Haller	Filling machines Fruit and berry washers	Horix Mfg. Co., Pittsburgh, (4), Pa.
Halyard	Wire opener cap	Anchor Cap & Closure Corp., L. I. C., N. Y.
Hammerclear	Carton sealing paper	Anchor Cap & Closure Corp., L. I. C., N. Y.
Hammerglass	Glassine paper	Anchor Cap & Closure Corp., L. I. C., N. Y.
Hammerglint	Tarnish resistant paper	Anchor Cap & Closure Corp., L. I. C., N. Y.
Hammer-Parchment	Greaseproof paper	Anchor Cap & Closure Corp., L. I. C., N. Y.
Hampak	Printed transparent wraps	Daniels Mfg. Co., Rhinelander, Wisc.
Handelok	Carry bag	Wolf Bros., Philadelphia, Pa.
Handilift	Tiering machine	Standard Conveyor Co., St. Paul, Minn.
Handirol	Mending and binding tape	Gummed Tape & Devices Co., Brooklyn, N. Y.
Handy Service	Package of sterilized glass bottles	Owens-Illinois Glass Co., Toledo, O.
Hang-Rite	Garment holders	Waldorf Paper Products Co., St. Paul, Minn.
Hard-Tex	Inks	Fuchs & Lang Mfg. Co., Div. General Printing Ink Corp., New York, N. Y.
Hartglass	Embossed sulphite	Hartford City Paper Co., Hartford City, Ind.
H & D	Corrugated shipping boxes	The Hinde & Dauch Paper Co., Sandusky, O.
Helmold	Rules, cutters, notchers, joint brazers	J. F. Helmold & Bro., Inc., Chicago, Ill.
Hercules	Rule cutter	J. F. Helmold & Bro., Inc., Chicago, Ill.
Heresite	Phenol-formaldehyde molding compound	Heresite & Chemical Co., Manitowoc, Wis.
Hiawatha	Out-folding carton gluer	E. G. Staude Mfg. Co., St. Paul, Minn.
Hi-Gloss	Varnishes and inks	Pope & Gray, Inc., New York, N. Y.
Hi-Gloss	Base paper for lacquer	S. D. Warren Co., Boston, Mass.
Hi-Lite	Labels and seals	Dennison Mfg. Co., Framingham, Mass.
Hi-Low	Composite paper and shipping cartons	Container Corp. of America, Chicago, Ill.
Himes	One-piece box	American Box Board Co., Grand Rapids, Mich.
Hi-Paco	Cartons for sheets, pillow cases, etc.	High Point Paper Box Co. Inc., High Point, North Carolina
Hi-Pak	Cellophane bags for bulk groceries	Thomas M. Royal & Co., Philadelphia, Pa.
Hoepner	Bag sewing machines Automatic scale	Consolidated Packaging Machinery Corp., Buffalo, N. Y.
Holdfast	Printing inks	International Prtg. Ink Div. of Interchemical Corp., New York, N. Y.
Holly Scroll	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Hooper	Corrugating, printing and container making machinery	F. X. Hooper Co. Inc., Glenarm, Md.
H-Scale	Synthetic Pearl Essence	Celluloid Corp., New York, N. Y.
Huebriks	Box papers	Hazen Paper Co., Holyke, Mass.
Humi-Jar	Jar	Owens-Illinois Glass Co., Toledo, O.
Humitube	Bags, pouches, tubes and envelopes of cellophane	Humitube Mfg. Co., Peoria, Ill.
Hycoloid	Cellulose, vials, containers and specialties	Hygienic Tube & Container Corp., Newark, N. J.
Hycoloid	Odorless unbreakable containers, tubes and vials	Celluplastic Corp., Newark, N. J.

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TRADE NAME DIRECTORY

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Hydro-Tite	Asphalt center boxboard	Gardner-Richardson Co., Middletown, O.
Hy-Glos	Gummed and ungummed labels	Tompkins' Label Service, Philadelphia, Penna.
Hy-Lustr	High gloss inks	Robinson Tag & Label Co., New York, N. Y.
Hyroto	Rotogravure printing machine	Rotogravure Engineering Co., East Boston, Mass.
Hy-Speed	Bottling machinery	Alsop Engineering Corp., New York, N. Y.
Ideal	Vibrating packers Conveyors and elevators	B. F. Gump Co., Chicago, Ill.
Ideal	Wire stitching machine	Ideal Stitcher & Mfg. Co., Racine, Wisc.
Illustra-Color	Reproduction method for displays	The U. S. Printing & Lithograph Co., Cincinnati, O.
Impervo	Cardboard outdoor display	Arvey Corp., Chicago, Ill.
Impervo	Outdoor display	Arvey Corp., Chicago, Ill.
Impression	Ink embossed box cover paper	The Marvellum Co., Holyoke, Mass.
Inceloid	Transparent sheeting, adhesives and coatings	American Products Mfg. Co., New Orleans, La.
Inco-Rolls	Single face corrugated colored display	Inland Container Corp., Indianapolis, Ind.
Inco-Peds	Corrugated colored display material	Inland Container Corp., Indianapolis, Ind.
Inco-Steps	Corrugated colored display material	Inland Container Corp., Indianapolis, Ind.
Indette	Box paper	Kupfer Bros. Co., New York, N. Y.
Indur	Phenolic molding compounds, resins and varnishes	Reilly Tar & Chemical Corp., Indianapolis, Ind.
Innercoat	Plain waterproof wrapping paper	Angier Corp., Framingham, Mass.
Innerstrung	Reinforced waterproof wrapping paper	Angier Corp., Framingham, Mass.
"Insite" Signs	Decalcomania transfers	Milprint, Inc., Milwaukee, Wis.
Insulux	Glass block	Owens-Illinois Glass Co., Toledo, O.
Insurok	Custom laminated and molded plastic	The Richardson Co., Melrose Park (Chicago), Ill.
In-Tag	Gravure inks	In-tag Div. Interchemical Corp., New York, N. Y.
International	Automatic box making machinery	International Paper Box Machine Co., Nashua, N. H.
IPI	Printing inks, lithographic supplies	International Printing Ink, Div. Interchemical Corp., New York, N. Y.
Ivanhoe	Paper containers	Cambridge Paper Box Co., Cambridge, Mass.
Ivorytone	Opaque bread wraps	Newark Paraffine & Parchment Paper Co., Newark, N. J.
Jacquard	Box paper	The Marvellum Co., Holyoke, Mass.
Jalcold	Tin plate	Jones & Laughlin Steel Corp., Pittsburgh, Penna.
Jaypaco	Laminated board	Jaypaco Corp., New York, N. Y.
Jaypaco	Laminated board	Joe Salwen Paper Co., New York, N. Y.
JW	Air cleaners	U. S. Bottlers Machinery Co., Chicago, Ill.
JWD	Washers	U. S. Bottlers Machinery Co., Chicago, Ill.
Kakimaco	Filter	Karl Kiefer Machine Co., Cincinnati, O.
Kala Cork	Cork paper	Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
Kalafilm	Wrapping paper	Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
Kan-D-Pak	Printed transparent wraps	Daniels Mfg. Co., Rhinelander, Wisc.
Kay-Dee-Pac	Paper pails	Container Corp. of America, Chicago, Ill.
Keglined	Beer and ale cans	American Can Co., New York, N. Y.
Kemgo	Printing compound	Markem Machine Co., Keene, N. H.
Kennecot	Pyroxylin coated papers	C. R. Whiting Co., Inc., Hackensack, N. J.
Kensington	Clasp envelopes	American Paper Goods Co., Kensington, Conn.
Keystone Stay	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Kidette	Box paper	Kupfer Bros. Co., New York, N. Y.
Kidskin	Pyroxylin box papers	Hazen Paper Co., Holyoke, Mass.
Kiltie Plaids	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Kimpak	Protective crepe wadding	Kimberly-Clark Corp., Chicago, Ill.
King Markwell	Marking and printing inks	Markem Machine Co., Keene, N. H.
Kivar	Artificial leather	The Plastic Coating Corp., Holyoke, Mass.
Klean	Printing inks, lithographic supplies	International Printing Ink, Div. Interchemical Corp., New York, N. Y.
Kleer Glaze	Transparent waxed sulphite	Central Waxed Paper Co., Chicago, Ill.
Kleerview	Glassine	Rhinelander Paper Co., Rhinelander, Wis.
Kleer View	Waxed glassine	Central Waxed Paper Co., Chicago, Ill.
Kleerwrap	Glassine	Rhinelander Paper Co., Rhinelander, Wis.
Klondike	Gold and silver casein papers	C. R. Whiting Co., Inc., Hackensack, N. J.
Klothwhite	Retail store wrapping paper	Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
Knife-O	Closure	Owens-Illinois Glass Co., Toledo, O.
Kodapak	Transparent acetate sheet	Eastman Kodak Co., Rochester, N. Y.
Kodatape	Gummed cloth tape	Eastman Kodak Co., Rochester, N. Y.
Kork-N-Seal	Initial and re-sealing cap with lever	Continental Can Co., New York, N. Y. The Crown Cork & Seal Co., Baltimore, Md. Williams Sealing Corp.
Kraflex	Gummed kraft paper sealing tape	Central Paper Co., Menasha, Wisc.
Krimpac	Specialty wraps	Milprint, Inc., Milwaukee, Wis.
Kromekote	Box cover paper	Matthias Paper Corp., Philadelphia, Pa.
Kromekote	High finish coated paper	Champion Paper & Fibre Co., Hamilton, O.
KVP	Waxed papers, plain and printed Genuine vegetable parchment	Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
KwickKlasp	Mailing boxes	W. H. Deisroth Co., Inc., Philadelphia, Pa.
Kwik-Kleen	Filters (water)	The Liquid Carbonic Corp., Chicago, Ill.
Kwikset	Paper cartons	Container Corp. of America, Chicago, Ill.
L N F Bond	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
Labco Fibre	Kraft board	The LaBoiteaux Co., Inc., Cincinnati, Ohio
Labelrite	Fully automatic labelers	New Jersey Machine Corp., Hoboken, N. J.
Labelstik	Metal boxes	George D. Ellis & Sons, Inc., Myers Mfg. Div., Philadelphia, Penna.
Lace and Flowers	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Lace Frills	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Lacqueleather	Waterproof leather papers	C. R. Whiting Co., Inc., Hackensack, N. J.
Lac-R-Print	Lacquered bags	Thomas M. Royal & Co., Philadelphia, Penna.
Lafayette	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Lamcote	Cellulose acetate lamination process	Arvey Corp., Chicago, Ill.
Lamcote Cover	Cover stock	Arvey Corp., Chicago, Ill.
Lamcote Fabrics	Cellulose laminated fabrics	Arvey Corp., Chicago, Ill.
Laminam	Laminated paper, cloth, foil	General Laminating Co., New York, N. Y.
Lard Pak	Printed transparent wraps	Daniels Mfg. Co., Rhinelander, Wisc.
Latham	Wire stitchers	Dexter Folder Co., Pearl River, N. Y.
Lattisette	Box paper	Kupfer Bros. Co., New York, N. Y.
Lavette	Box paper	Kupfer Bros. Co., New York, N. Y.
Leafage	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Leatherette	Box paper	Kupfer Bros. Co., New York, N. Y.
Lenonet	Open-mesh bags	Bemis Bro. Bag Co., St. Louis, Mo.
Lenox Gold	Gold and platinum box coverings	McLaurin-Jones Co., Brookfield, Mass.
Lepaco	Moisture and greaseproof board	Lebanon Paper Box Co., Lebanon, Pa.
Lev-A-Lift	Device for friction plug cans	The Lev-A-Lift Co., New York, N. Y.
Leverpak Drum	Fibre drum	The Container Co., Van Wert, Ohio
Lightning	Coated box coverings	McLaurin-Jones Co., Brookfield, Mass.
Lightning Seal	Bread wrappers	Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
Lily White	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Linco	Belt conveyor	Karl Kiefer Machine Co., Cincinnati, O.
Link-Belt	Elevating, conveying and power transmission equipment	Link-Belt Co., Chicago, Ill.
Lion Brand	Adhesives	Manhattan Paste & Glue Co. Inc., Brooklyn, N. Y.

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TRADE NAME DIRECTORY

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Liquid	Labeling machines and accessories	Liquid Carbonic Corp., Chicago, Ill.
Liquipak Drum	Fibre drum	The Container Co., Van Wert, Ohio
Listette	Box paper	Kupfer Bros. Co., New York, N. Y.
Lithocrome	Industrial finishes	Ault & Wiborg Corp., New York, N. Y.
Lithox	Printing inks, lithographic supplies	International Printing Ink, Div. Interchemical Corp., New York, N. Y.
Lithwite	Boxboard	Gardner-Richardson Co., Middletown, O.
Loftee	Display cotton	Union Wadding Co., Pawtucket, R. I.
Lock-Tite	Dress box	American Box Board Co., Grand Rapids, Mich.
Lock Top	Screw top can with locking lugs	Continental Can Co., New York, N. Y.
Locktop	Paper cans	Morris Paper Mills, Chicago, Ill.
Lock Top	Paper ice cream can	National Folding Box Co., New Haven, Conn.
Lo-Maintenance	Electric motors (3-phase and d-c)	Allis-Chalmers Mfg. Co., Milwaukee, Wisc.
Lookit	Set-up and acetate boxes	Flower City Specialty Co., Rochester, N. Y.
Loomlite	Textile box papers	Hazen Paper Co., Holyoke, Mass.
Lotol	Processed and/or compounded latex	Naugatuck Chemical Div., U. S Rubber Co., New York, N. Y.
Low Pressure	Fillers	The Liquid Carbonic Corp., Chicago, Ill.
Lucite	Methyl methacrylate molding powder	E. I. du Pont de Nemours & Co., Inc., Arlington, N. J.
Lumarith	Cellulose acetate molding material Cellulose acetate sheets, rods, tubes and rolls	Celluloid Corp., New York, N. Y.
Lumarith Protectoid	Cellulose acetate sheeting	Celluloid Corp., New York, N. Y.
Lusteroid	Transparent and colored vials and tubes	Lusteroid Container Co., Inc., South Orange, N. J.
Lustr-Cote	Gloss printing inks	Eagle Printing Ink Co., Div. General Printing Ink Co., New York, N. Y.
Lustrette	Box paper	Kupfer Bros. Co., New York, N. Y.
Lustre-Print	Labels and seals	Dennison Mfg. Co., Framingham, Mass.
Lustro	Aniline printing process	Milprint, Inc., Milwaukee, Wis.
Lustro	Cellophane ribbon	Food Packaging Inc., Milwaukee, Wisc.
Lustron	Polystyrene molding compound	Monsanto Chemical Co., Plastics Div., Springfield, Mass.
Lustron	Wrapping paper	Hartford City Paper Co., Hartford City, Ind.
Lustrseal	Closure	Owens-Illinois Glass Co., Toledo, O.
Lux-Lite	Displays with flashers	Reynolds Metals Co., Richmond, Va.
Luxor Gold	Gold box covering	McLaurin-Jones Co., Brookfield, Mass.
Luxorline	Box cover paper	Matthias Paper Corp., Philadelphia, Pa.
M & S	Fillers	Food Machinery Corp., Sprague-Sells Div., Hoopeston, Ill.
Mailmaster	Mailing box	The Mason Box Co., Attleboro Falls, Mass.
Mainstay	Bag closing twine	Bemis Bro. Bag Co., St. Louis, Mo.
Makalot	Phenol resin molding compound	Makalot Corp., Boston, Mass.
Maralux	Bags for hygroscopic products	Menasha Products Co., Menasha, Wis.
Marble-Sheen	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Marco	Leather grain paper	The Marvellum Co., Holyoke, Mass.
Markem	Printing machines	Markem Machine Co., Keene, N. H.
Master	Infolding diagonal gluing machine	E. G. Staude Mfg. Co., St. Paul, Minn.
Mastercraft	All Benmont products	Benmont Papers Inc., Bennington, Vt.
Master Prints	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Master Ray	Metal surfaced counter and window displays	Reynolds Metals Co., Richmond, Va.
Masterwrap	Interfolded waxed tissue	Rhinelander Paper Co., Rhinelander, Wis.
Matador	Paper bag machines	H. H. Heinrich, Inc., New York, N. Y.
Match-Box	Printing inks, lithographic supplies	International Printing Ink, Div. Interchemical Corp., New York, N. Y.
Mayfair	Salt and pepper shakers	Owens-Illinois Glass Co., Toledo, O.
Mayflower	Paper drinking cups	American Paper Goods Co., Kensington, Conn.
McLaurin	Gummed tape tester	Thwing-Albert Instrument Co., Phila., Pa.
Measure Scoop	Bag filling device	Food Packaging Inc., Milwaukee, Wis.
Melco	Decorated metal containers	Seymour Products Co., Seymour, Conn.
Melody Print	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Menasha	Paraffined cartons and papers	The Menasha Products Co., Menasha, Wis.
Mercury	Closure	Owens-Illinois Glass Co., Toledo, O.
Mercury	Carton gluer	E. G. Staude Mfg. Co., St. Paul, Minn.
Mercury Process	Vignette for labels	The U. S. Printing & Lithograph Co., Cincinnati, O.
Metacel	Metal adhesive tape	Reynolds Metals Co., Richmond, Va.
Metal-Art	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Metal Art Plaid	Box covering paper	Holyoke Card & Paper Co., Springfield, Mass.
Metal Edge	Paper Box	National Metal Edge Box Co., Philadelphia, Penna.
Metal Edge	Reinforced paper boxes	National Metal Edge Box Co., Philadelphia, Pa.
Metalglass	Metallic coated glassine	Hartford City Paper Co., Hartford City, Ind.
Metaline	Printed embossed paper	Hampden Glazed Paper & Card Co., Holyoke, Mass.
Metallacs	Metallic box papers	Hazen Paper Co., Holyoke, Mass.
Metaloid	Embossed signs and boxes and plaques	Chaspec Mfg. Co., Inc., New York, N. Y.
Metaloid	Pyroxylin coated paper	The Plastic Coating Corp., Holyoke, Mass.
Metalour	Gold and platinum metallic papers	The Marvellum Co., Holyoke, Mass.
Metaltone	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Metalustre	Metallic lacquer enamels	Maas & Waldstein Co., Newark, N. J.
Metlak	Silver and gold ink	Pope & Gray, Inc., New York, N. Y.
Metso	Cleansers	Philadelphia Quartz Co., Philadelphia, Pa.
Micacrystal	Crinkled cellophane	Aldine Paper Co., New York, N. Y.
Michcote	Patent coated boxboard	Michigan Carton Co., Battle Creek, Mich.
Midget	Static eliminator	The Simco Co., Philadelphia, Pa.
Midget	Wire staples	Acme Staple Co., Camden, N. J.
Midget	Labeling machines and accessories	The Liquid Carbonic Corp., Chicago, Ill.
Mikah	Glues and pastes	National Adhesives Div., National Starch Products, Inc., New York, N. Y.
Millbridge	General	Springfield Coated Paper Corp., Camden, N. J.
Miller	Package and bundle wrapping machines	Miller Wrapping & Sealing Machine Co., Chicago, Ill.
Mil-O-Seal	Pliofilm encasing cooked meat loaves	Milprint, Inc., Milwaukee, Wis.
Mirette	Box paper	Kupfer Bros. Co., New York, N. Y.
Mirolite	Transparent bread wraps	Newark Paraffine & Parchment Paper Co., Newark, N. J.
Mirrodescent	Box papers	Hazen Paper Co., Holyoke, Mass.
Modern Clipper	Automatic bag-making machine	Modern Containers, Inc., Los Angeles, Cal.
Moderne Dull Antique	Clay coated paper	Bradner Smith & Co., Chicago, Ill.
Modern Union	Metal displays	Union Steel Products Co., Albion, Mich.
Moistite	Bakery package board	Waldorf Paper Products Co., St. Paul, Minn.
Moist Pruf	Set up paper cigar boxes	Consolidated Box Co. Inc., Tampa, Fla.
Molloy-Made	Imitation leather containers	The S. K. Smith Co., Chicago, Ill.
Monarch	Fillers	The Liquid Carbonic Corp., Chicago, Ill.
Monarch	Right angle folding box gluer	E. G. Staude Mfg. Co., St. Paul, Minn.
Monocell	Filter	Karl Kiefer Machine Co., Cincinnati, O.
Mono Kleen Kups	Paraffined containers	Mono Service Co., Newark, N. J.
Mono-Pak	Collapsible tubes for single use	A. H. Wirz, Inc., Chester, Pa.
Mono-Piston	Filling machine for viscous materials	Karl Kiefer Machine Co., Cincinnati, O.
Monoscale	Can filling machine	Karl Kiefer Machine Co., Cincinnati, O.
Mono Spout	Spout fitting	Continental Can Co., New York, N. Y.
Monsanto C. N.	Cellulose nitrate (pyroxylin)	Monsanto Chemical Co., Plastics Div., Springfield, Mass.

TRADE NAME DIRECTORY

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Morr Glos	Gloss ink	Geo. H. Morrill Co., Div. General Printing Ink Corp., New York, N. Y.
Morris	Box closing lock	Robertson Paper Box Co., Inc., Montville, Conn.
Morrison	Box stitchers	Harris-Seybold-Potter Co., Dayton, Ohio
Morrison	Wire stitching machines	Harris-Seybold-Potter Co., Dayton, O.
Mosaic Parquetry	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Motoair	Pump for vacuum and pressure	New Jersey Machine Corp., Hoboken, N. J.
Multi	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
Multitone	Printing inks	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
Mural	Fancy waterproof box paper	The Marvellum Co., Holyoke, Mass.
Myers	Metal boxes	George D. Ellis & Sons, Inc. Myers Mfg. Div., Philadelphia, Penna.
Myracol	Cartons	Container Corp. of America, Chicago, Ill.
Nafomatic	Folding paper box	National Folding Box Co., New Haven, Conn.
Nanking	Chinese papers	The Stevens-Nelson Paper Corp., New York, N. Y.
Napcones	Displays	The National Process Co., New York, N. Y.
Nap grippe	Displays	The National Process Co., New York City
National	Labeling machines and accessories	The Liquid Carbonic Corp., Chicago, Ill.
National	Food products metal bags	Reynolds Metals Co., Richmond, Va.
National	Packaging machinery	U. S. Automatic Box Machinery Co., Inc., Roslindale, Boston, Mass.
Natsume	Japanese papers	The Stevens-Nelson Paper Corp., New York, N. Y.
NCCO	Tin cans	National Can Corp., New York, N. Y.
Needlekraft	Paper for box coverings	Pejepscot Paper Co., New York, N. Y.
Neocell	Cellulose vials, containers and specialties	Hygienic Tube & Container Corp., Newark, N. J.
Neo-Classic	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Nestcup	Nesting container	Sutherland Paper Co., Kalamazoo, Mich.
Nestrite	Nested, waxed and unwaxed containers	Lily-Tulip Cup Corp., New York, N. Y.
Newman Seal	Circular compounded crimped closure	Continental Can Co., New York, N. Y.
New Perfection	Dropping outfits	Pennsylvania Glass Products Co., Pittsburgh, Pa.
Nixonoid	Cellulose nitrate (pyroxylin)	Nixon Nitration Works, Nixon, N. J.
No-Kap	Closures	No-Kap Closures (U. S. A.) Inc., Providence, R. I.
No-Kap	Collapsible tubes	National Collapsible Tube Co., Providence, R. I.
Nolox	Knock-down paper box	American Box Board Co., Grand Rapids, Mich.
No-Lox	Folding carton	Robert Gair Co., Inc., New York, N. Y.
Nolox	Garment boxes	Morris Paper Mills, Chicago, Ill.
Norloc	Molded plastic packages	Norton Laboratories, Inc., Lockport, N. Y.
Non-Scuff	Liner board on corrugated boxes	F. J. Kress Box Co., Pittsburgh, Pa.
No Sol Vit	Alkali free serum containers	T. C. Wheaton Co., Millville, N. J.
Novar	Decalcomania label	Palm, Fechteler & Co., New York, N. Y.
Nu-Craft	Display corrugated	Sherman Paper Products Corp., Newton Upper Falls, Mass.
Nu-Curve	Display corrugated	Sherman Paper Products Corp., Newton Upper Falls, Mass.
Nugget	Cover paper	United Mfg. Co., Springfield, Mass.
Nu-Glas	Glass tumblers, jars and bottles	Anchor Hocking Glass Corp., Lancaster, Ohio
NuGlaze	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Nu-Hide	Box cover paper	Matthias Paper Corp., Philadelphia, Pa.
NuMat	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Nu-Trim	Display corrugated	Sherman Paper Products Corp., Newton Upper Falls, Mass.
Nuvohack	Folding paper box	Everett Young Co., Providence, R. I.
Nuvopak	Merchandising containers	Cambridge Paper Box Co., Cambridge, Mass.
Obeco	Folding paper box	National Folding Box Co., New Haven, Conn.
O. & J.	Labeling machines and accessories	Liquid Carbonic Corp., Chicago, Ill.
Oldelace	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Old Tavern	Gold and platinum box coverings	McLaurin-Jones Co., Brookfield, Mass.
Onized	Containers	Owens-Illinois Glass Co., Toledo, O.
Opalite	Cast phenolic semi-transparent	Catalin Corp., New York, N. Y.
Opalon	Cast resin plastic	Monsanto Chemical Co., Plastics Div., Springfield, Mass.
Orientone	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Orpco	Corrugated boxes and displays	Ottawa River Paper Co., Toledo, O.
Outserts	Package adv. for the outside of containers	Outserts Inc., New York, N. Y.
Overseal	Bottle closure	Aluminum Seal Co., New Kensington, Penna.
P. I. V. & V. R. D.	Variable speed transmission	Link-Belt Co., Chicago, Ill.
PMS Gel	Adhesives, starch derived	Stein, Hall Mfg. Co., Chicago, Ill.
Pace-Maker	Table gummer	New Jersey Machine Corp., Hoboken, N. J.
Packomatic	Packaging machinery	J. L. Ferguson Co., Joliet, Ill.
Packomatic Chief	6-in-line net wt. scale	J. L. Ferguson Co., Joliet, Ill.
Packomatic Commander	Container opener and positioner	J. L. Ferguson Co., Joliet, Ill.
Packrette	Box paper	Kupfer Bros. Co., New York, N. Y.
Pac-Kups	Paper containers	Dixie-Vortex Co., Easton, Pa.
Padinol	Flexible adhesive	The Fales Chemical Co., Inc., Cornwall Landing, N. Y.
Padocel	Wadding for packing	George H. Sweetnam, Inc., Cambridge, Mass.
Padox	Candy box tops	Union Wadding Co., Pawtucket, R. I.
Padsit	Padding paper-glassine backed	George H. Sweetnam, Inc., Cambridge, Mass.
Paisflex	Flexible adhesives	Paisley Products Inc., Chicago, Ill.
Paisley	General line	Paisley Products Inc., Chicago, Ill.
Paistex	Latex base adhesives	Paisley Products Inc., Chicago, Ill.
Paistick	Office, school, library paste	Paisley Products Inc., Chicago, Ill.
Palmetto	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Paperglos	Glassine paper	Westfield River Paper Co., Russell, Mass.
Paragon	Two-piece caps	Anchor Cap & Closure Corp., L. I. C., N. Y.
Parakote	Moisture-proof coated packaging papers	Menasha Products Co., Menasha, Wis.
Paramount	General	Paramount Paper Products Co., Inc., Philadelphia, Pa.
Paraply	Moisture-proof-greaseproof bakery packages	Menasha Products Co., Menasha, Wis.
Paraply	Moistureproof and greaseproof laminated cartons	The Menasha Products Co., Div. Marathon Paper Mills Co., Menasha, Wisc.
Parawax	All coated moistureproof bags	Paramount Paper Products Co., Inc., Philadelphia, Pa.
Parchkin	Vegetable parchment for art printing	Paterson Parchment Paper Co., Bristol, Pa.
Parchstone	Greaseproof innerwrap	Rhinelander Paper Co., Rhinelander, Wis.
Parkay	Woodgrain box papers	Hazen Paper Co., Holyoke, Mass.
Parkwood Textolite	Impregnated wood plastic material	General Electric Co., Plastics Dept., Pittsfield, Mass.
Parquet	Wood grain (imitation) box covers	District of Columbia Paper Mills Inc., Washington, D. C.
Parquette	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Parry	Paper box machinery	Samuel R. Parry Mach. Co., Inc., Rochester, N. Y.
Pastel Creations	Paper for box coverings	Pejepscot Paper Co., New York, N. Y.
Patapake	A white paper for printing and packaging	Paterson Parchment Paper Co., Bristol, Pa.
Patapar	Genuine vegetable parchment	Paterson Parchment Paper Co., Bristol, Pa.
Patawite	A 9 lb. manifold	Paterson Parchment Paper Co., Bristol, Pa.
Paterson	Genuine vegetable parchment	Paterson Parchment Paper Co., Bristol, Pa.
Paxwell	Padding	American Lace Paper Co., Milwaukee, Wisc.
Pee Gee	Reducing and non-scratch ink compounds	Pope & Gray, Inc., New York, N. Y.
Peerless	Stamping presses Roll leaf	Peerless Roll Leaf Co., Inc., Union City, N. J.

XUM

TRADE NAME DIRECTORY

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Peerless	Infolding gluing machine	E. G. Staude Mfg. Co., St. Paul, Minn.
Peerless	Label gummers	U. S. Bottlers Machinery Co., Chicago, Ill.
Pellette	Box paper	Kupfer Bros. Co., New York, N. Y.
Penargette	Box paper	Kupfer Bros. Co., New York, N. Y.
Penescope	Penetration tester	Thwing-Albert Instrument Co., Philadelphia, Pa.
Perfect Circle Plates	Engravings	Champlain Corp., Garfield, N. J.
Perfection	Box covering papers	Royal Paper Corp., New York, N. Y.
Perfection	Medicinal glassware	Pennsylvania Glass Products Co., Pittsburgh, Pa.
Perfect-O-Cut	Labels and seals	The Tablet & Ticket Co., Chicago, Ill.
Perfecto Pac	Pie collar	Milprint, Inc., Milwaukee, Wis.
Petite Moire	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Phantom	Embossed box papers	Hazen Paper Co., Holyoke, Mass.
Phantom-Lite	Displays with flashers	Reynolds Metals Co., Richmond, Va.
Phoenix	Band cap Cone top can	Phoenix Metal Cap Co., Chicago, Ill.
Photomailer	Mailing envelopes	Hinde & Dauch Paper Co., Sandusky, O.
Pilfer-Proof	Bottle closure	Aluminum Seal Co., New Kensington, Penna.
Pin Stripes	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Pintex	Printed box paper	The Marvellum Co., Holyoke, Mass.
Pique	Embossed mica paper	Hazen Paper Co., Holyoke Mass.
Pique Embossed	Box covering paper	Holyoke Card & Paper Co., Springfield, Mass.
Plaid Sheen	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Planet	Sealing tapes	McLaurin-Jones Co., Brookfield, Mass.
Plaskon	Urea formaldehyde molding compound	Plaskon Co., Inc., Toledo, O.
Plastacele	Cellulose acetate sheeting Cellulose acetate molding powder	E. I. du Pont de Nemours & Co., Co., Inc., Arlington, N. J.
Plastic Basket	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Plateglassine	Bleached glassine	Deerfield Glassine Co., Monroe Bridge, Mass.
Platelustre	Transparent colored lacquers	Maas & Waldstein Co., Newark, N. J.
Plexiglas	Methyl methacrylate molding compound	Röhm & Haas Co., Philadelphia, Penna.
Pli-Fast	Sealing tapes	Rexford Paper Co., Milwaukee, Wisc.
Plio	Pliofilm ribbon	Freydberg Bros. Inc., Stamford, Conn.
Pliofilm	Rubber-hydrochloride sheeting	The Goodyear Tire & Rubber Co., Akron, Ohio
Pliofilm	Transparent sheeting	Goodyear Tire & Rubber Co., Akron, O.
Pliolite	Coating material	Goodyear Tire & Rubber Co., Akron, O.
Pliolite	Moistureproof liquid casting	The Goodyear Tire & Rubber Co., Akron, Ohio
Plio-Ribbon	Printed pliofilm ribbon	Freydberg Bros., Inc., New York, N. Y.
Pliosuede	Velour pliofilm	Cellusuede Products, Inc., Rockford, Ill.
Plyglass	Multi-ply laminated glassine	Deerfield Glassine Co., Monroe Bridge, Mass.
Plymouth	Paper drinking cups	The American Paper Goods Co., Kensington, Conn.
Pneumatic	Packaging and bottling equipment	Pneumatic Scale Corp., Ltd., Quincy, Mass.
Pocono	Box cover paper	Matthias Paper Corp., Philadelphia, Pa.
Polymerin	Industrial finish	Ault & Wiborg Corp., New York, N. Y.
Polymerin	Industrial finishes	Ault & Wiborg Corp., New York, N. Y.
Pony	Small table gluers	New Jersey Machine Corp., Hoboken, N. J.
Pony Gummer	Table gummer	New Jersey Machine Corp., Hoboken, N. J.
Pony Labelrite	Semi-automatic labelers	New Jersey Machine Corp., Hoboken, N. J.
Popular Priced	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Porcell	Containers, molded pulp	American Lace Paper Co., Milwaukee, Wisc.
Port Low	Portable gravity sections	The Alvey-Ferguson Co., Cincinnati, O.
Postalett	Pocket letter scales	The Exact Weight Scale Co., Columbus, Ohio
Pour-Aid	Liquor pourer	Lanfare Molded Products, Toledo, Ohio
Pour-N-Seal	Initial and re-sealing cap with lever and pouring spout	Continental Can Co., New York, N. Y. The Crown Cork & Seal Co., Baltimore, Md. Williams Sealing Corp.
Precision	Medicinal droppers	Pennsylvania Glass Products Co., Pittsburgh, Pa.
Pressit	Liquid dispensers	The Food Dispenser Co., Hartford, Conn.
Presto	Box and label printing machines	Markem Machine Co., Keene, N. H.
Price It-Mark It	Stock design cellophane bags	Food Packaging Inc., Milwaukee, Wisc.
Print-Ad-String	Printed advertising tape	Chicago Printed String Co., Chicago, Ill.
Printloid	Transparent containers	Printloid, Inc., New York, N. Y.
Print-O	Waxed wrapping paper	Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
Printweigh	Electric weight-printer	Toledo Scale Co., Toledo, Ohio
Pris-O-Matic	Sift proof "Cellophane" bag	The Dobeckmun Co., Cleveland, Ohio
Protectall	Fibreboard and corrugated board boxes	Container Corp. of America, Chicago, Ill.
Protectopac	Specialty wraps	Milprint, Inc., Milwaukee, Wis.
Protek-Sorb	Adsorption for elimination of moisture damage	The Davis Chemical Corp., Silica Gel Dept., Baltimore, Md.
Protek-sorb	Moisture absorbent chemical	Davison Chemical Corp., Baltimore, Md.
Protektol	Industrial finishes	Ault & Wiborg Corp., New York, N. Y.
Protex	Padding	American Lace Paper Co., Milwaukee, Wisc.
Protinol	Label adhesive	The Fales Chemical Co. Inc., Cornwall Landing, N. Y.
Proxmelts	Molten coatings (melts)	Pyroxylin Products Inc., Chicago, Ill.
Proxmesh	Closed mesh fabrics	Pyroxylin Products Inc., Chicago, Ill.
Prystal	Cast phenolic plastic	Catalin Corp., New York, N. Y.
P Type	Liquid bottling machine	Karl Kiefer Machine Co., Cincinnati, O.
Pure Pail	Ice cream package	Bloomer Bros. Co., Newark Wayne Co., New York State
Pure Pak	Milk blanks	Gardner-Richardson Co., Middletown, O.
Pure-Pak	Paper milk containers	American Paper Bottle Co., Toledo, Ohio
Puritan	Paper drinking cups	The American Paper Goods Co., Kensington, Conn.
Puritan	Milk blanks	Gardner-Richardson Co., Middletown, O.
Puro Pak	Poultry box lining waxed paper	Central Waxed Paper Co., Chicago, Ill.
Purse Kit	Cosmetic kit	Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.
Pyralin	Cellulose nitrate (pyroxylin)	E. I. du Pont de Nemours & Co., Inc., Arlington, N. J.
Pyralon	Box paper	The Marvellum Co., Holyoke, Mass.
Pyrette	Box paper	Kupfer Bros. Co., New York N. Y.
Pyrex	Corning glass products	Corning Glass Works, Corning, N. Y.
Pyrodescent	Iridescent or pearl papers	Pyrotex Leather Co., Leominster, Mass.
Pyro-Seal	Pyroxylin metallics board stock	Bradner Smith & Co., Chicago Ill.
Pyro Sheen	Pyroxylin coated papers	Pyrotex Leather Co., Leominster, Mass.
Pyroxcote	Lacquers	Pyroxylin Products Inc., Chicago, Ill.
Quick	Printing inks, lithographic supplies	International Printing Ink, Div. Interchemical Corp., New York, N. Y.
Quick Pac	Cracker caddy	Robert Gair Co., Inc., New York, N. Y.
Quick-Set Compound	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
Quikseal	Closure	Owens-Illinois Glass Co., Toledo, O.
Quik-Set	Folding carton	Robert Gair Co., Inc., New York, N. Y.
Radiant	Embossed paper—not coated	Hampden Glazed Paper & Card Co., Holyoke, Mass.
Rainbow	Paper for box coverings	Pejepscot Paper Co., New York, N. Y.
Rainbow	Flint paper	Bradner Smith & Co., Chicago, Ill.
Rainbow	Reinforced cellophane bags	The Munson Bag Co., Cleveland, O.
Rainbow	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Rarewood	Woodgrain box papers	Hazen Paper Co., Holyoke, Mass.

TRADE NAME DIRECTORY

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Rayette	Box paper	Kupfer Bros. Co., New York, N. Y.
Rayon	Mica box paper	The Marvellum Co., Holyoke, Mass.
Ray-Rib	Rayon ribbon	Fibre Cord Co., New York, N. Y.
R.C.	Chip board	The Butterfield-Barry Co., New York, N. Y.
Really Flo	Gummed papers	Mid-States Gummed Paper Co., Chicago, Ill.
Red Core	All products	Rexford Paper Co., Milwaukee, Wisc.
Red Diamond	Labeling machines and accessories	The Liquid Carbonic Corp., Chicago, Ill.
Reddirap	Greaseproof wrap for liners, etc.	Riegel Paper Corp., New York, N. Y.
Redington	Packaging and cartoning machines	F. B. Redington Co., Chicago, Ill.
Red Stripe	Extra heavy box cambric	Rexford Paper Co., Milwaukee, Wisc.
Reel-Hide	Box cover paper	Matthias Paper Corp., Philadelphia, Pa.
Reflectone	Flint glazed papers	Wyomissing Glazed Paper Co., Reading, Penna.
Reilly Indur	Molding powders	Reilly Tar & Chemical Corp., Indianapolis, Ind.
Reindeer	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Renaissance	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Repaco	Wrappers—indented inner and outer wraps	The Republic Paperboard Co., Cincinnati, O.
Reptile	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Re-Seal-It	Re-sealing bottle caps	Reynolds Metals Co., Richmond, Va.
Resinox	Phenolic molding material	Monsanto Chemical Co., Plastics Div., Springfield, Mass.
Revelation	Cellophane wrappers and bags	Milprint,Inc., Milwaukee, Wis.
Revolving Merchandiser	Electric turntables	Motion Displays, Inc., Brooklyn, N. Y.
Rex	Chains and conveyors	Chain Belt Co., Milwaukee, Wisc.
Reyco	Metal bottleneck wraps	Reynolds Metals Co., Richmond, Va.
Reycraft	Corrugated decorative display papers and boards	The Reyburn Mfg. Co., Inc., Philadelphia, Penna.
Reycurv	Corrugated decorative display papers and boards	The Reyburn Mfg. Co., Inc., Philadelphia, Penna.
Reydec	Corrugated decorative display papers and boards	The Reyburn Mfg. Co., Inc. Philadelphia, Penna.
Reyflute	Corrugated decorative display papers and boards	The Reyburn Mfg. Co., Inc., Philadelphia, Penna.
Reytone	Corrugated decorative display papers and boards	The Reyburn Mfg. Co., Inc., Philadelphia, Penna.
Reytrim	Corrugated decorative display papers and boards	The Reyburn Mfg. Co., Inc., Philadelphia, Penna.
Rhomboid	Display carton	Robert Gair Co., Inc., New York, N. Y.
Ribbon and Pine	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Ribbonette	Cotton tying materials	Chicago Printed String Co., Chicago, Ill.
Rib-Sheen	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Richleaf Gold and Platinum	Casein metalic coated papers	Hampden Glazed Paper & Card Co., Holyoke, Mass.
Ridgelo	Clay coated, metallic coated, brush finish, laminated boxboards	Lowe Paper Co., Ridgefield, N. J.
Riegeline	Transparent glassine	Riegel Paper Corp., New York, N. Y.
Riegelite	Transparent waxed glassine	Riegel Paper Corp., New York, N. Y.
Rimseal	Friction closure	The Aridor Co., Chicago, Ill.
Rimvac	Vacuum closure	The Aridor Co., Chicago, Ill.
Ripco	Greaseproof paper	Rhinelander Paper Co., Rhinelander, Wis.
Ripco Auto-Pak	Greaseproof innerwrap	Rhinelander Paper Co., Rhinelander, Wis.
Riplette	Box paper	Kupfer Bros. Co., New York, N. Y.
Ripple	Box cover	District of Columbia Paper Mills Inc., Washington, D. C.
Ripplekraft	Stretchable wrapping paper	Angier Corp., Framingham, Mass.
Rippletone	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
RO	Closure	Aluminum Seal Co., New Kensington, Penna.
Rockette	Box paper	Kupfer Bros. Co., New York, N. Y.
Roll-Rite	Rolling pin	Owens-Illinois Glass Co., Toledo, O
Rose	Display box	Morris Paper Mills, Chicago, Ill.
Rotary "X"	Web rotary tape press	Package Sealing & Label Co., New York, N. Y.
Rotokits	Containers for spices, herbs and salts	Gutterson & Co., Inc., New York, N. Y.
Rotopaque	Printing process for transparent film	The Munson Bag Co., Cleveland, Ohio
Roto Prints	Metallic box covering paper	Holyoke Card & Paper Co., Springfield, Mass.
Roverseals—RO	Roll-on tamperproof over standard roll-on	Aluminum Seal Co., New Kensington, Pa.
Royal	Protective milk bottle hoods	Reynolds Metals Co., Richmond, Va.
Royal Satin	News board	The Butterfield-Barry Co., New York, N. Y.
Royal Satin	Quality newsboard for quality boxes	Butterfield-Barry Co. Inc., The, New York, N. Y.
R.T.G.	Folding cartons and displays	The Richardson Taylor-Globe Corp., Cincinnati, O.
S & S	Filling, packaging, wrapping paper box machines	Stokes & Smith Co. Frankford, Philadelphia, Pa.
Safedge	Tumblers	Owens-Illinois Glass Co., Toledo, O.
Safe Myx	Spray solution	Triangle Ink & Color Co. Inc., Brooklyn, N. Y.
Safe Pack	Automatic egg carton	Grant Paper Box Co., Pittsburgh, Penna.
Safetex	Gummed kraft paper sealing tape	Central Paper Co., Menasha, Wisc.
Safe-T-Seal	Sealing tape	Rexford Paper Co., Milwaukee, Wisc.
Safety-Seal	Mailing boxes	W. H. Deisroth Co., Inc., Philadelphia, Penna.
Safeway	Counter rolls of cellophane and roll cutters	Safeway Products Corp., New York, N. Y.
Saf-T-Loid	Cellulose acetate boxes	Parfait Powder Puff Co., Chicago, Ill.
St. Albans	Colored design papers	Stevens-Nelson Paper Corp., New York, N. Y.
St. Valentine	Box paper	Kupfer Bros. Co., New York, N. Y.
Salers	Advertising folder	Stecher-Traung Lithograph Corp., Rochester, N. Y.
Sales Appeal	All coated moistureproof bags	Paramount Paper Products Co., Inc., Philadelphia, Pa.
Salespackage	Glass containers	Owens-Illinois Glass Co., Toledo, Ohio
Sandalwood	Imitation wood grain box covers	District of Columbia Paper Mills Inc., Washington, D. C.
Saniseal	Metal milk or water caps	Ferdinand Gutmann & Co., Brooklyn, N. Y.
Sani-Sherm	Fluted liners	Sherman Paper Products Corp., Newton Upper Falls, Mass.
Sanitair	Double action air cleaner	U. S. Bottlers Machinery Co., Chicago, Ill.
Sanitape	Tablet packager	Ivers-Lee Co., Newark, N. J.
Sanitape-Sealtite	Individually wrapped tablet package Unit powder package	Ivers-Lee Co., Newark, N. J.
Saranac	Bag sealers, & stitching machinery	Saranac Industries, Benton Harbor, Mich.
Sateen	Mica embossed	Hampden Glazed Paper & Card Co., Holyoke, Mass.
Satinettes	Box paper	Kupfer Bros. Co., New York, N. Y.
Satin-Glo	Display fabric	Columbus Coated Fabrics Corp., Columbus, Ohio
Satinteen	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Satintone	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Satinwood	Box covering paper	Chas. W. Williams & Co., Inc, New York, N. Y.
Save-A-Seal	Closure	Owens-Illinois Glass Co., Toledo, O.
Scotch fabrics	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y
Scotch Plaids	Paper for box coverings	Pejepscot Paper Co., New York, N. Y.
Scotchweave	Box covers	District of Columbia Paper Mills Inc., Washington, D. C.
Scott	Net weighing machines	U. S. Automatic Box Machinery Co., Inc., Roslindale, Boston, Mass.
Scuff-Proofed	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Scuf-Pruf	Box cover paper	Matthias Paper Corp., Philadelphia, Pa.
Scutan	Waterproof paper	Union Bag & Paper Corp., Scutan Div., New York, N. Y.
Seafoam	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Seal Brand	Adhesives	Philadelphia Quartz Co., Phila., Pa.
Se-All	Jars and bottles	Owens-Illinois Glass Co., Toledo, O.
Seal-Spout	Aluminum pouring spout	American Aluminum Ware Co., Newark, N. J.
Sealtite	Paper bag sealers	Consolidated Packaging Machinery Corp., Buffalo, N. Y.
Sealtite-Uniwrap	Individual label attached package	Ivers-Lee Co., Newark, N. J.
Seal-Tye	Paper bag sealers	Consolidated Packaging Machinery Corp., Buffalo, N. Y.

XUM

TRADE NAME DIRECTORY

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Sealz	Thermoplastic rubber compounds	Dispersions Process Inc., New York, N. Y.
Sebrof	Poster making process	The Forbes Lithograph Mfg. Co., Boston, Mass.
See-Thru	Rigid transparent container	Clark Co. Inc., Geo. V., Long Island City, N. Y.
See-Thru	Transparent boxes and displays	See-Thru Container Corp., New York, N. Y.
Self-Locking	Egg carton	Self-Locking Carton Co., Chicago, Ill.
Self Seal	Open end envelopes	U. S. Envelope Co., Springfield, Mass.
Sell-O-Face	Window bread wraps and bags	Thomas M. Royal & Co., Philadelphia, Penna.
Sell-O-Royal	Cellophane bags and sheets	Thomas M. Royal & Co., Philadelphia, Penna.
Selmor	Display stands	Hinde & Dauch Paper Co., Sandusky, O.
Semi-Seal	Cellophane glued to backboard	Milprint, Inc., Milwaukee, Wis
Sentry-Seal	Closure	Owens-Illinois Glass Co., Toledo, O.
Serpette	Box paper	Kupfer Bros. Co., New York N. Y.
Seybold	Paper cutters	Harris-Seybold-Potter Co., Dayton, Ohio
Seybold Precision	Die presses	Harris-Seybold-Potter Co., Dayton, Ohio
Seymour	Decorated metal containers	Seymour Products Co., Seymour, Conn.
Shadotone	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
Shadowgraph	Overweight - underweight scales	The Exact Weight Scale Co., Columbus, Ohio
Shadowplaid	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Sheer Sheen	Mica box papers	Hazen Paper Co., Holyoke, Mass.
Sheffield Process	Collapsible tubes	New England Collapsible Tube Co., New London, Conn.
Sheipco 4 Star	Silver chests for packaging silverware	Henry H. Sheip Mfg. Co., Philadelphia, Penna.
Shellback	Double shell caps	Anchor Cap & Closure Corp., L. I C., N. Y.
Shell-Tint	Transparent tint over portions of transparent cellulose wraps	Shellmar Products Co., Mt. Vernon, Ohio
Shell-Glo	Clear transparent laminated cellulose	Shellmar Products Co., Mt. Vernon, O.
Shell-Mark	Transparent cellulose bags	Shellmar Products Co., Mt. Vernon, O.
Shell-Pax	Transparent cellulose containers	Shellmar Products Co., Mt. Vernon, O.
Shell-Pli	Printed laminated cellulose	Shellmar Products Co., Mt. Vernon, O.
Shell-Vue	Transparent gummed acetate paste	Shellmar Products Co., Mt. Vernon, O.
SHH	Single head cappers	U. S. Bottlers Machinery Co., Chicago, Ill.
Shoksorb	Indented packing paper	Schmidt & Ault Paper Co., York, Pa.
Showmaster	Electric turntables	Motion Displays, Inc., Brooklyn, N. Y.
Shy-Nee	Printing inks, lithographic supplies	International Printing Ink, Div. Interchemical Corp., New York, N. Y.
Signodes	Steel strapping	Signode Steel Strapping Co., Chicago, Ill.
Silica Gel	Moisture absorbent chemical	Davison Chemical Corp., Baltimore, Md.
Silk Sheen	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Silray	Silver box paper	The Marvellum Co., Holyoke, Mass.
Silvalum	Silver embossed paper	Springfield Coated Paper Corp., Camden, N. J.
Silver Beams	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Silvergloss	Silver box paper	The Marvellum Co., Holyoke, Mass.
Silver King	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Silverlink	Roller chain	Link-Belt Co., Chicago. Ill.
Silver Mosaic	Brightwood kid finish papers	Holyoke Card & Paper Co., Springfield, Mass.
Silver Plaid	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Silversheen	Printing ink	Sigmund Ullman Co., Div. General Printing ink Corp., Bronx, N. Y.
Silverstitch	Stapling wire	Acme Steel Co., Chicago, Ill.
Silverstreak	Silent chain	Link-Belt Co., Chicago, Ill.
Silvertone	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Silvertone	Metallized cellulose ribbon	Fibre Cord Co., New York City
Sil-Vor-Plate	Aluminum bronze ink	Geo. H. Morrill Co., Div. General Printing Ink Corp., New York, N. Y.
Simplex	Folding and display carton	Paper Package Co., Indianapolis, Ind.
Simplex	Wire staples	Acme Staple Co., Camden, N. J.
Simplex	Pie and cake container	Milprint, Inc., Milwaukee, Wis.
Simplex	Folding paper boxes	Simplex Paper Box Corp., Lancaster, Penna.
Single	Labeling machines & accessories	The Liquid Carbonic Corp. Chicago, Ill.
Single Plate	Filter	Karl Kiefer Machine Co., Cincinnati, O.
Singletin	One-use collapsible tube	Victor Metal Products Corp., Brooklyn, N. Y.
Skytogen	Box paper	Kupfer Bros. Co., New York, N. Y.
Skytone	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Slak-Tite	Paper bag sealers	Consolidated Packaging Machinery Corp., Buffalo, N. Y.
Slant Side	Sloping side folding box	Michigan Carton Co., Battle Creek, Mich.
Smart Set	Salt and pepper shakers	Owens-Illinois Glass Co., Toledo, O.
Smithcrafted	Imitation leather containers	The S. K. Smith Co., Chicago Ill.
Snac-Pak	Corrugated basket container for cakes	Ashtabula Corrugated Box Co., The, Astabula, Ohio
Snake Tape	Gummed wrapping tape	Angier Corp., Framingham, Mass.
Snapper-Wraps	Cellophane cylindrical wraps	Dennison Mfg. Co., Framingham, Mass.
Snopaque	Opaque, white glassine	Riegel Paper Corp., New York, N. Y.
Snowdrift	Greaseproof paper	Rhinelander Paper Co., Rhinelander, Wis.
Snowflake	Padding	American Lace Paper Co., Milwaukee, Wisc.
Snowflake and Star	Box covering paper	Holyoke Card & Paper Co., Springfield, Mass.
Snow White Litho	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Snowhite Stiktite	Box wrap	Fitchburg Paper Co., Fitchburg, Mass.
Solac	Cellulose cemen	Maas & Waldstein Co., Newark, N. J.
Solar	Box covers	District of Columbia Paper Mills Inc., Washington, D. C.
Soldertite	Can spouts	Standard Specialty & Tube Co., New Brighton, Pa.
Solidry	Inks and varnishes	Pope & Gray, Inc., New York, N. Y.
Sonsettes	Box paper	Kupfer Bros. Co., New York, N. Y.
Sorbolite	Light proof board	Waldorf Paper Products Co., St. Paul, Minn.
Sorting Scale	Automatic continuous check-weighing and sorting scale	Merrick Scale Mfg. Co., Passaic, N. J.
Spede-Pac	Ice cream pail	Bloomer Bros. Co., Newark, Wayne Co., New York State
Speed-Limit	Printing inks	International Printing Ink Div. of Interchemical Corp., New York, N. Y.
Spee-D-Mark	Cellulose bags	U. S. Envelope Co., Springfield, Mass.
Speedweigh	Scales	Toledo Scale Co., Toledo, O.
Speed-Wrap	Automatic sheeting and gluing machine	Miller Wrapping & Sealing Machine Co., Chicago, Ill.
Speeway	Motors and display turntables	Speedway Mfg. Co., Cicero, Ill.
Sphinx	Adhesive	Arabol Mfg. Co., New York, N. Y.
Spiralon	Flint and foil box papers	Hazen Paper Co., Holyoke, Mass.
Spongeflex	Flexible non-warp glues	Paisley Products Inc., Chicago, Ill.
Sport-Art	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Spot Lite	Glassine wrappers	Milprint, Inc., Milwaukee, Wis.
Sprague-Sells	Canning machinery	Food Machinery Corp., Sprague-Sells Div., Hoopeston, Illinois
Springtime Line	Box cover paper	Matthias Paper Corp., Philadelphia, Pa.
Spun-Sheen	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Square-Pak	Paraffined ice cream container	The Menasha Products Co., Div. Marathon Paper Mills Co., Menasha, Wisc.
Square Sheen	Embossed mica paper	Hazen Paper Co., Holyoke Mass.
Square-Tex	Printed box paper	The Marvellum Co., Holyoke, Mass.
"S & S"	Machinery	Stokes & Smith Co., Philadelphia, Penna.
Stainless	Metal foils	Keller-Dorian Paper Co., New York, N. Y.
Standard	Labeling machine and accessories	Liquid Carbonic Corp., Chicago, Ill.
Stapak Drum	Fibre drum	The Container Co., Van Wert, Ohio
Staplecraft	Hand, foot, motorized stapling	Acme Staple Co., Camden, N. J.
Star	Adhesive	Bingham Bros. Co., New York, N. Y.
Star Brand	Pastes and glues	Bingham Bros. Co., New York, N. Y.
Stardust	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.

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TRADE NAME DIRECTORY

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Star Sheen	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Star and Step	Box covers	District of Columbia Paper Mills Inc., Washington, D. C.
Staytite	Gummed stay tape	Bradner Smith & Co., Chicago, Ill.
Steelbelt	Conveyor belting	Acme Steel Co., Chicago, Ill.
Steelstrap	Steel strapping	Acme Steel Co., Chicago, Ill.
Sterillined	Inner lined containers	The Interstate Folding Box Co., Middletown, O.
Sterling	Gummed tape	The Gummed Products Co., Troy, Ohio
Stikfast	Label pasters	Diagraph-Bradley Stencil Machine Corp., St. Louis, Mo.
Streamer Bows	Pre-tied cellulose bows	Stark Bros. Ribbon Corp., New York, N. Y.
Stretchrap	Wrapping machine	Stokes & Smith Co., Frankford, Philadelphia, Pa.
Sturdite	Leather cloth	Holliston Mills, Inc., Norwood, Mass.
Styron	Polystyrene molding granules	The Dow Chemical Co., Midland, Mich.
SUco	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
Suedette	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Sullmanco	Printing ink	Sigmund Ullman Co., Div. General Ink Corp., Bronx, N. Y.
Sunco	Dry colors	Sun Chemical & Color Co., Div. General Printing Ink Corp., Harrison, N. J.
Sunex	Transparent liquid adhesive	American Phenolic Corp., Chicago, Ill.
Sunrise	Sealing tapes	McLaurin-Jones Co., Brookfield, Mass.
Sunshine	Box cover paper	Matthias Paper Corp., Philadelphia, Pa.
Sunshine	Box paper	Bradner Smith & Co., Chicago, Ill.
Super Cell	Egg cartons (2 x 6)	The Interstate Folding Box Co., Middletown, O.
Superkleen	Bottle washers	The Liquid Carbonic Corp., Chicago, Ill.
Superseal	Heat sealing glassine	Hartford City Paper Co., Hartford City, Ind.
Super Seal	Printed bread wrappers	Mensaha Products Co., Menasha, Wis.
Super-Seal	Leakproof cellophane bags	Munson Bag Co., Cleveland, O
SUperset	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
Sure Shot	Wire staples	Acme Staple Co., Camden, N. J.
SUtility	Printing inks	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
SUtone	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
SUveneer	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
Sweepstakes	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Sweetone	George H. Sweetnam products	George H. Sweetnam, Inc., Cambridge, Mass.
Sylphcase	Artificial sausage casings	Sylvania Industrial Corp., New York, N. Y.
Sylph-Flake	Sylphrap Confetti	Sylvania Industrial Corp., New York, N. Y.
Sylphrap	Transparent cellulose sheeting	Sylvania Industrial Corp., New York, N. Y.
Sylphseal	Secondary closures—bottle bands	Sylvania Industrial Corp., New York, N. Y.
Sylph-Thin	Artificial transparent sausage casings	Sylvania Industrial Corp., New York, N. Y.
Sylvania	Sylvania cellophane and other products	Sylvania Industrial Corp., New York, N. Y.
Synchro Ink	Printing inks, lithographic supplies	International Printing Ink, Div. Interchemical Corp., New York, N. Y.
Syntron	Weighing machines Vibrators and packers	Syntron Co., Homer City, Penna.
Tamper-Proof	Rupturing band tamper-proof	Aluminum Seal Co., New Kensington, Pa.
Tap-A-Flow	Closure dispenser	Federal Tool Corp., Chicago, Ill.
Tappit	Liquid dispensers	Food Dispenser Co., Hartford, Conn.
Tarcette	Box paper	Kupfer Bros. Co., New York, N. Y.
Taylor Made	Paper boxes	Taylor Box Co., Providence, R. I.
T.B.&B.	Lithographed papers	Trautmann, Bailey & Blampey, Art & Box Wrap Dept., New York, N. Y.
Television	Tin canister with acetate window	Geo. V. Clark Co., Inc., L. I. C., N. Y.
Tell-U-Tags	Marking tags	Dennison Mfg. Co., Framingham, Mass.
Tenite	Cellulose acetate molding compound	Tennessee Eastman Corp., Kingsport, Tenn.
Tenite I	Cellulose acetate molding composition	Tennessee Eastman Corp., Kingsport, Tenn.
Tenite II	Cellulose acetate butyrate molding composition	Tenenssee Eastman Corp., Kingsport, Tenn.
Texol	Pyroxylin-coated fabric	Farrington Mfg. Co., Boston, Mass.
Texkraft	Imitation leather paper base	Textileather Corp., Toledo, Ohio
Texrope	Multiple V-belt drive	Allis-Chalmers Mfg. Co., Milwaukee, Wisc.
Textileather	Imitation leather	Textileather Corp., Toledo, Ohio
Textile Prints	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Textiloid	Imitation leather paper base	Textileather Corp., Toledo, Ohio
Textolite	Compression and injection molded plastics	General Electric Co., Plastics Dept., Pittsfield, Mass.
Thermium	Heat sealing paper and tape	Seal, Inc., Shelton, Conn.
Thermo	Tin printing inks	Crescent Ink & Color Co. of Pa , Philadelphia, Penna.
Thermoloid	High relief plastic material	Chaspec Mfg. Co., Inc., New York, N. Y.
Therm-O-Top	Bags with heat sealing application at top	Thomas M. Royal & Co., Philadelphia, Pa.
Thin-Wrap	Wrapping machine for thin packages	Miller Wrapping & Sealing Machine Co., Chicago, Ill.
Three in One	Steel strapping tightening, sealing, and cutting tool	Stanley Works, New Britain, Conn.
Throway	No deposit, no return throw-away beer bottles	Anchor Hocking Glass Corp., Lancaster, Ohio
Ticco	General	Triangle Ink & Color Co., Inc., Brooklyn, N. Y.
Tie-Tie	Gift wrappings, ribbons, seals	Chicago Printed String Co., Chicago, Ill.
Tiger Stay	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Timely Suggestions	Box paper	Kupfer Bros. Co., New York, N. Y.
Tinsley	Display carton	Robert Gair Co., Inc., New York, N. Y.
Tiny Midget	Static eliminator	The Simco Co., Phila., Pa.
Tip Off	Closure	Owens-Illinois Glass Co , Toledo, O.
Titelok	Cylindrical paper container	Sutherland Paper Co., Kalamazoo, Mich.
TL Type	Liquid bottling machine	Karl Kiefer Machine Co., Cincinnati, O.
Tone-Craft	Display corrugated	Sherman Paper Products Corp., Newton Upper Falls, Mass.
Topcote	Moisture resistant coating	Brooks Bank Note Co., Springfield, Mass.
Topmost	Wire-handle paper pail (tin-seal)	Sutherland Paper Co., Kalamazoo, Mich.
Topper	Bottle carriers	Container Corp. of America, Chicago, Ill.
Tran-Cel-Seal	Cellulose tape	Gummed Tape & Devices Co. Brooklyn, N. Y.
Transowrap	Transparent cellulose sheeting	Transolene Co., Barrington, Ill.
Transplastics	Transparent plastics process	Waterbury Button Co., Plastics Div., Waterbury, Conn.
Trans-Ply	Printed laminated acetate	Dennison Mfg. Co., Framingham, Mass.
Transtate Bags	Combination cellophane and glassine bags	The Interstate Folding Box Co., Middletown, O.
Transwrap	Automatic packaging machine	Stokes & Smith Co., Frankford, Philadelphia, Pa.
Trapcote	Grease resistant coating	Brooks Bank Note Co., Springfield, Mass.
Tray-Pax	Transparent cellulose sheet with rigid base or back	Shellmar Products Co., Chicago, Ill.
Tredonia	Moistureproof and greaseproof packages	Grant Paper Box Co., Pittsburgh, Penna.
Tricolette	Box paper	Kupfer Bros. Co., New York, N. Y.
Triple Seal	Closure	Owens-Illinois Glass Co., Toledo, O.
Tripletite	Special friction top paint can	Continental Can Co., New York, N. Y.
Tri-Seal	Metal cigar wraps	Reynolds Metals Co., Richmond, Va.
Tri-Sheen	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
Trojan	Gummed tape and paper	The Gummed Products Co., Troy, Ohio
Trophy	Flints and mica	Bradner Smith & Co., Chicago, Ill.
Tru-Hue	Patented window and counter displays	James Andrew DeNina, New York, N. Y.
Tru-Pak	Satchel-bottom bags	Cupples Hesse Envelope & Litho. Co., St. Louis, Mo.
Trutite	Key opening vacuum can	Continental Can Co., New York, N. Y.
Tru-Tone	Food pictorials for canned goods	The U. S. Printing & Lithograph Co., Cincinnati, O.
Tru-Tone	Illustrations for canned food labels	The United States Printing & Lithograph Co., Cincinnati (Norwood), Ohio
Tutone	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Twinkle-Sheen	Embossed mica paper	Hazen Paper Co., Holyoke, Mass.
250 Gum	Adhesives, starch derived	Stein, Hall Mfg. Co., Chicago, Ill.
Two Way	Labels for cans and glass	Muirson Label Co. Inc., Brooklyn, N. Y.
2X-10	Adhesives, starch derived	Stein, Hall Mfg. Co., Chicago, Ill.
Ullmanine	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.

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TRADE NAME DIRECTORY

TRADE NAME	NATURE OR TYPE OF PRODUCT	COMPANY & ADDRESS
Ultropaque	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
Unifoil	Light gauge metal mounted paper backing	Reynolds Metals Co., Richmond, Va.
Unifoil	Thin gauge foil	Reynolds Metals Co., Richmond, Va.
Unifold	Folding garment box	Gardner-Richardson Co., Middletown, O.
Union	Point-of-sale displays	Union Steel Products Co., Albion, Mich.
Uniplex	Lug cap	National Seal Corp., Brooklyn, N. Y.
Uniseal	Can sealing compound	Max Ams Machines Co., The, Bridgeport, Conn.
Unishell	One piece cap substitute for double shell cap	National Seal Corp., Brooklyn, N. Y.
Unishell	Special one-piece screw cap	Continental Can Co., New York, N. Y.
Unitainers	Single use metallic containers	Sun Tube Corp., Hillside, N. J.
Unit Load	Steel band freight bracing method	Acme Steel Co., Chicago, Ill.
Universal	Tablet counting and filling machine Cellophane tube making machine	Ivers-Lee Co., Newark, N. J.
Universal	Conveyor chain	Link-Belt Co., Chicago, Ill.
Universal	Bottle washers	The Liquid Carbonic Corp., Chicago, Ill.
Upaco	All types of adhesives	Union Paste Co., Medford, Mass.
U-Press-It	Special opening pouring spout and cap	Continental Can Co., New York, N. Y.
U.S.	Bottling machinery	U. S. Bottlers Machinery Co., Chicago, Ill.
Utility	Volumetric filler	Triangle Package Machinery Co., Chicago, Ill.
Vacutop	Applicator closures, self feeding	Double Duty Products, Inc., Cleveland, Ohio
Valvo	Collapsible tubes	National Collapsible Tube Co., Providence, R. I.
Vanity Line	Box cover paper	Matthias Paper Corp., Philadelphia, Pa.
Vapetex	Thermoplastic coated board	The Interstate Folding Box Co., Middletown, O.
Vapometer	Water tester	Thwing-Albert Instrument Co., Philadelphia, Pa.
Vaporin	Printing inks	International Printing Ink Div. of Interchemical Corp., New York, N. Y.
Vaposeal	Glassine paper lacquer coated	Westfield River Paper Co. Inc., Russell, Mass.
Vari-Pitch	Variable speed V-belt transmission	Allis-Chalmers Mfg. Co., Milwaukee, Wisc.
Vari-Visco	Filling machine for viscous materials	Karl Kiefer Machine Co., Cincinnati, O.
Velboard	Velour box or chip board	Cellusuede Products Inc., Rockford, Ill.
Velmar	Waterproof dull coated papers	The Marvellum Co., Holyoke, Mass.
Velmat	Greeting card paper	Springfield Coated Paper Corp., Camden, N. J.
Velmo	Box paper	The Marvellum Co., Holyoke, Mass
Versailles Satintone	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Vibrox	Vibrating packers	B. F. Gump Co., Chicago, Ill.
Vichrome	Industrial finishes	Ault & Wiborg Corp., New York, N. Y.
Victoria	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Victorian Floral	Fancy paper	Louis Dejonge & Co., New York, N. Y.
Victor Tape	Printed advertising tape	Chicago Printed String Co., Chicago, Ill.
Vigorette	Box paper	Kupfer Bros. Co., New York N. Y.
Viking	Cellulose window gluing combining machine	E. G. Staude Mfg. Co., St. Paul, Minn.
Vinicote	Special internal coatings for collapsible tubes	New England Collapsible Tube Co., New London, Conn.
Vinylite	Transparent, translucent, or opaque plastic sheets, coated paper, molding compounds, surface coating resins	Union Carbide & Carbon Corp., New York N. Y.
Virkotype	Raised printing compounds	Wood, Nathan & Virkus Co., Inc., New York, N. Y.
Visco	Filling machine for viscous materials	Karl Kiefer Machine Co., Cincinnati, O.
Visinet	Open-mesh bags	Bemis Bro. Bag Co., St. Louis, Mo.
Visitainer	Transparent container	Old Dominion Box Co., Lynchburg, Va.
Visowrap	Cellophane and paper window wrapper	The Dobeckmun Co., Cleveland, O.
Visualized	Window and transparent bags	Paramount Paper Products Co., Inc., Philadelphia, Pa.
Vol-U-Meter	Semi-automatic drum filling valve	The Vol-U-Meter Co., Buffalo, N. Y.
Vol-U-Meter Junior	Can filling machine	The Vol-U-Meter Co., Buffalo, N. Y.
Vortex Cups	Paper drinking cups and containers	Dixie-Vortex Co., Easton, Pa.
Vue-Pak	Rigid acetate sheets	Monsanto Chemical Co., Plastics Div., Springfield, Mass.
Wabacoat	Coated board	Container Corp. of America, Chicago, Ill.
Walsello	Cellophane ribbons	The Walser Mfg. Co., Inc., Clifton, N. J.
Ware Foils	Coated box coverings	McLaurin-Jones Co., Brookfield, Mass.
Waregold-Ware	Gold and platinum box coverings	McLaurin-Jones Co., Brookfield, Mass.
Warelac	Coated box coverings	McLaurin-Jones Co., Brookfield, Mass.
Wareplatinum	Platinum box covering	McLaurin-Jones Co., Brookfield, Mass.
Ware Super Colors	Coated box coverings	McLaurin-Jones Co., Brookfield, Mass.
Warnercraft	Boxes	The Warner Bros. Co., Bridgeport, Conn.
Warnercraft	Boxes and cartons	Warner Bros. Co., Bridgeport Conn.
Washington Brilliant	Box covers	District of Columbia Paper Mills Inc., Washington, D. C.
Water-Tite	Waterproof papers	Rexford Paper Co., Milwaukee, Wisc.
Wavee	Embossed parchment	George H. Sweetnam, Inc., Cambridge, Mass.
Weavette	Box paper	Kupfer Bros. Co., New York, N. Y.
Weightometer	Automatic conveyor scale	Merrick Scale Mfg. Co., Passaic, N. J.
Weklite	Coated and foil box papers	Hazen Paper Co., Holyoke, Mass.
Werthy	Ribbons	W-E-R Ribbon Corp., New York, N. Y.
Wesca	Capper	Scientific Filter Co., New York, N. Y.
Whalehide	Crate liners	Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
Wheeling	Steel drums	Wheeling Corrugating Co., Wheeling, Va.
Whirlwind	Electric label paster and screw capper	Scientific Filter Co., New York, N. Y.
Whitehall	Dispensers	Food Dispenser Co., Hartford, Conn.
Whiz-Tape	Narrow opening tape inserted beneath transparent wrappers	Shellmar Products Co., Mt. Vernon, Ohio
Williamson	Adhesives	Williamson Adhesives, Inc., Chicago, Ill.
Williams Stripe	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Wind-O-Band	Cellulose bands	Armstrong Cork Co., Lancaster, Penna. E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
Windoseals	Milk bottle hoods	Reynolds Metals Co., Richmond, Va.
Winnerwite	Box cover paper	Matthias Paper Corp., Philadelphia, Pa.
Wirestrap	Round wire strap	Acme Steel Co., Chicago, Ill.
Wizard	Marking compound	Markem Machine Co., Keene, N. H.
Wizard Iceproof	Glue for labeling bottles	Midland Glue Products Co., Detroit, Mich.
Wonder	Printing inks, lithographic supplies	International Printing Ink, Div. Interchemical Corp., New York, N. Y.
Wonpreshun	Printing ink	Sigmund Ullman Co., Div. General Printing Ink Corp., Bronx, N. Y.
Woodcraft	Wood veneer (imitation)	The Marvellum Co., Holyoke, Mass.
Woodcraft	Woodgrain box paper	The Marvellum Co., Holyoke Mass.
Woodcraft	Box covering paper	Chas. W. Williams & Co., Inc. New York, N. Y.
Woodette	Box paper	Kupfer Bros. Co., New York, N. Y.
Worlbeater	Hand mixer	Na-Mac Products Corp., Los Angeles, Calif.
World	Automatic labelers	Economic Machinery Co., Worcester, Mass.
World's Fair	Box covering paper	Chas. W. Williams & Co., Inc., New York, N. Y.
Wrap-Ade	Bag making machinery and crimpers	Wrap-Ade Machine Co. Inc. Newark, N. J.
Wrap-O-Matic	Wrapping machine for small irregular products	Modern Equipment Corp., Defiance, Ohio
Wright	Paper drills and punches	Harris-Seybold-Potter Co., Dayton, Ohio
Wun der bar	Genuine greaseproof paper	Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.
"X" Base	Inks for raised printing	Wood, Nathan & Virkus Co., Inc., New York, N. Y.
Yuletide	Box paper	Kupfer Bros. Co., New York N. Y.
Zapon	Lacquer coatings	Zapon Div., Atlas Powder Co., Stamford, Conn.
Zephyr	Combining lacquers-cements Carton gluer	E. G. Staude Mfg. Co., St. Paul, Minn.
Zero-Seal	Waxed paper	The Menasha Products Co., Div. Marathon Paper Mills Co., Menasha, Wis.
Zip Tape	Cellophane package opening tape	The Dobeckmun Co., Cleveland, Ohio
Zip-Wrap	Cellophane sheet with pull tape attached	The Dobeckmun Co., Cleveland, O.

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